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Ground-water resources of Montgomery County, Pennsylvania

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
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Ground-water resources of Montgomery County, Pennsylvania

by Thomas G. Newport
U. S. Geological Survey

Prepared by the United States Geological Survey Water Resources Division, in cooperation with the Pennsylvania Geological Survey

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PREFACE

This report is presented as a comprehensive description and inventory of the groundwater resources available in Montgomery County. With the continuing growth of our population and the expansion of our industries, there is an ever increasing rise in demand for quality water resources. Groundwater, or subsurface water, constitutes one of the largest reserves of quality water remaining to be developed.

This report can be of assistance to anyone who is planning for future water needs. It will help to evaluate the quantity and quality of groundwater available in any part of the county, and it will aid in choosing the locations, depths, and conditions most favorable for desired groundwater yield.

While this publication has attempted to include all available groundwater data for the county, the Pennsylvania Topographic and Geologic Survey will continue to collect groundwater and water well data for the area; such data will be kept on open file at the Survey offices in Harrisburg, available to anyone who desires the very latest information.

We hope that this report will aid all users of water in Montgomery County to develop and manage their water resources so as to accommodate their water needs.

ARTHUR A. SOCOLOW

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GROUND-WATER RESOURCES OF MONTGOMERY COUNTY, PENNSYLVANIA

by

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Water Resources Division

ABSTRACT

The bedrock formations in Montgomery County range in age from Quaternary to Precambrian. The Quaternary and Tertiary rocks are thin, discontinuous, and small in areal extent, and are not considered as aquifers. The Brunswick and Stockton Formations of Triassic age occur over a large part of the county. Other Triassic rocks, the diabase and Lockatong Formation, have a smaller areal extent. The rocks of Paleozoic age occur in a narrow band near the southern border of Montgomery County. These Paleozoic rocks are grouped as one unit on the geologic map. Precambrian rocks are also grouped together in this report.

Ground water in the bedrock occurs largely in secondary openings, such as joint planes or solution openings. These secondary openings are more abundant in the Brunswick and Stockton Formations and wells in these formations will yield sufficient water for industrial and municipal supplies. The Lockatong Formation and the Diabase have fewer joints and, consequently, yield only enough water for domestic supplies. Large solution openings have been encountered at different places in the carbonate rocks, and wells with very high yields have been developed. Well yields in the igneous and metamorphic rocks are generally small. Data are tabulated for more than 800 wells in Montgomery County.

Chemical analyses are available for ground water from 121 wells in Montgomery County. Ground water in the Triassic rocks is largely of the calcium-bicarbonate type. However, water from these rocks having concentrations of dissolved solids greater than 500 mg/l (milligrams per liter) are of the calcium-sulfate type. Ground-water quality differs greatly from one unit to another in the Paleozoic rocks. Dissolved-solids content ranges from 32 mg/l in the quartzites to 243 mg/l in the carbonate rocks. Hardness ranges from 15 mg/l in the quartzites to 270 mg/l in the carbonates. The quality of water from the igneous rocks is generally good. The quality of water from metamorphic rocks differs considerably between formations. In some of these rocks the water is very highly mineralized and is not used.

INTRODUCTION

LOCATION AND GENERAL GEOGRAPHIC FEATURES

Montgomery County occupies an area of 491 square miles in southeastern Pennsylvania (Figure 1), immediately to the northwest of Philadelphia. Norristown is the county seat and largest borough.

The area is predominantly an undulating plain, with relief provided by low hills and ridges. The land slope and drainage is to the southeast, toward the Delaware River. Most of the county is drained by the Schuylkill River and its tributaries, but the eastern section of the county is drained by Neshaminy, Pennypack, and Tacony Creeks, which flow directly into the Delaware River.

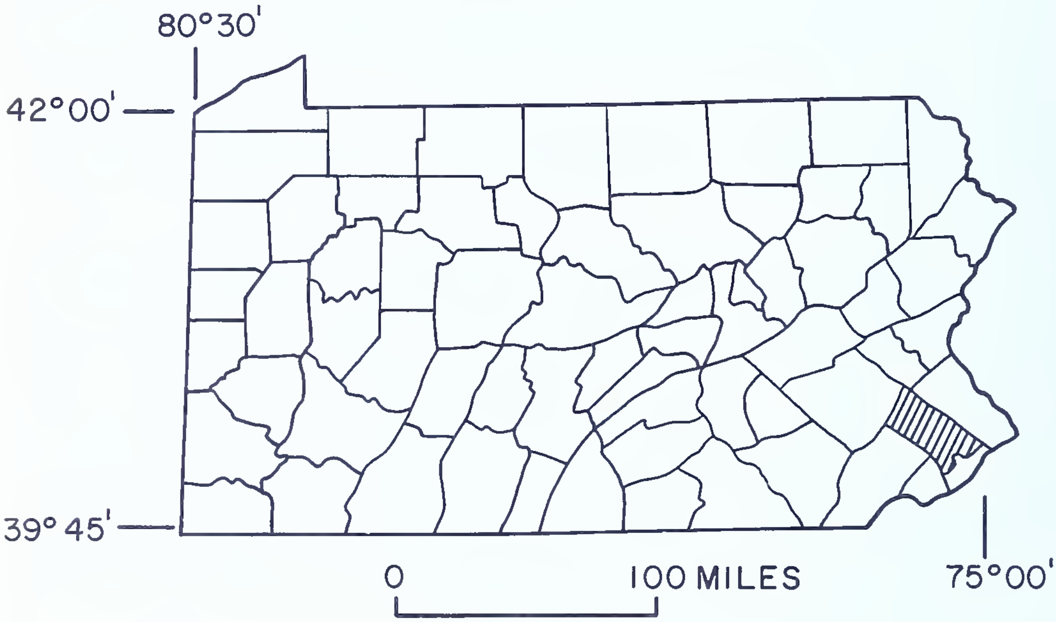


Figure 1. Location of Montgomery County.

POPULATION GROWTH AND POPULATION DENSITY

Census records show that there were 23,000 inhabitants in the county in 1790. The number had increased to 70,000 in 1860, and to 350,000 by 1950. Since 1950 the rate of population growth has increased rapidly. Between 1950 and 1970, a peak period of growth, the population grew to 618,017, an increase of more than 76 percent.

Forecasts made by the Montgomery County Planning Commission indicate that the population of the county will increase to 933,000 by the year 1985. This growth will, of course, require additional development of water supplies.

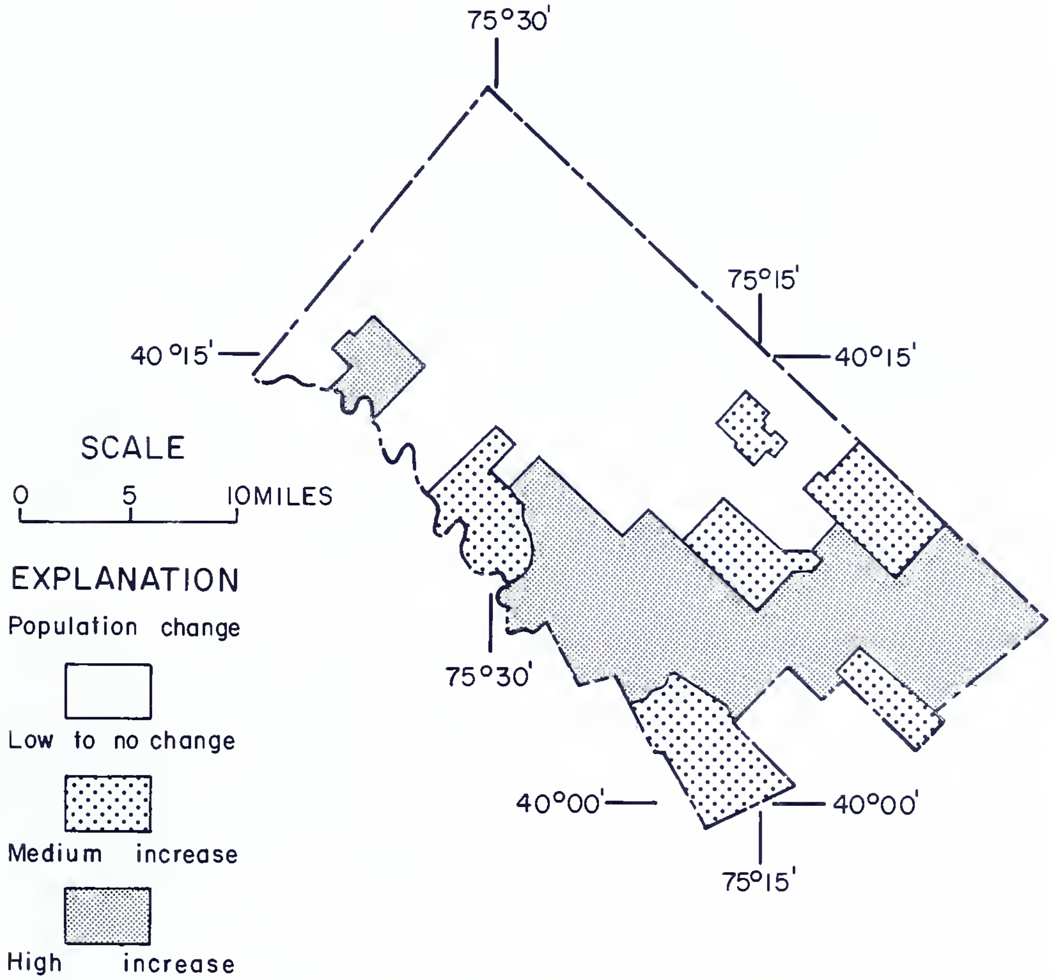


Figure 2. Population density increase, 1920-1960.

Population distribution in Montgomery County ranges from very dense in the southern part to sparse in the north. The pattern of population density increase (Figure 2) reflects a northward transition from highly urban Philadelphia to its suburban communities and finally to the rural areas of northern Montgomery County. Some areas along the Schuylkill River show only moderate increase in population because the land area is so highly industrialized that there is little room for more housing.

EFFECTS OF POPULATION GROWTH ON WATER NEEDS

The overall population growth of the county will create a corresponding need for larger supplies of water. Also, based on national averages, the per capita use of water is increasing from ½ to 2 percent per year. There have been water shortages within some areas of the county in the recent past and, without adequate safeguards, such shortages could occur again. Actually, enough water potentially is available for all needs in the foreseeable future. The major problem is in the withdrawal and distribution of all available supplies. It is hoped that this report will supply useful data concerning the availability, development, and protection of ground-water supplies of the area. The sources of water within the county are streams and impoundments and ground water.

Towns, communities, and industrial sites are not always located over good aquifers or near streams of sufficient size for use as a water supply. If streams are nearby, water supplies are readily obtainable; however, the quality and quantity of surface water is subject to much variation over the short term as well as seasonally. Streams are more easily polluted than is ground water, but their quality improves rapidly with dilution and with removal of the polluting agent.

Ground-water supplies are available in varying amounts throughout Montgomery County. In some areas the supplies available are large enough for municipal and industrial supplies. In others, wells may yield only water enough for minimum household use. Even where well yields are very small, however, such a supply may be the only one available to many individual homeowners. The amounts available vary seasonally and decline with long periods of drought, but less so than surface water. Consistent quality is the most important attribute of ground water; temperature and chemical quality remain constant, making treatment much simpler. When pollution occurs it is generally long-lived. Since they are visible, surface water supplies appear to be more abundant than ground water. Locally, as along the Schuylkill, this is true. As will be shown later, however, most of the water flowing in streams has drained from the ground-water reservoir. Additionally, because of its low temperature of about 52°F throughout the year and its uniform chemical quality, ground water is highly desirable for use by many industries.

LAND USE IN THE 1960's

The expansion of cities and communities is rapidly changing the land use in Montgomery County. The number of farms has declined in the last few years, and in 1960 the rural population made up less than one-fourth of the total population. Most of the farms in Montgomery County

are devoted to the production of beef and dairy cattle or poultry products. There is relatively little farming of grain, fruit, or vegetable crops.

Much of the land area is now composed of country estates, housing developments, and part-time farms. These are the homes of persons who commute to nearby cities or industrial parks.

The percentage of land occupied by streets and parkways, which is a measure of the intensity of urbanization, is greatest in the southern part of the county and decreases gradually towards the rural northern part of Montgomery County. The highly suburban character of the southern part of the county also is indicated by the fact that nearly 50 percent of the land is classified as residential, being occupied mainly by single-family houses.

In the past, most of the industry within the area has been concentrated along the Schuylkill River. The more recent trend, which is expected to increase in the future, is the establishment of industrial parks throughout other parts of the county. There are now (1969) 19 such areas, located mostly along the Pennsylvania Turnpike and its extension.

WHERE THE WATER COMES FROM

HYDROLOGIC CYCLE

Water is one of our most important resources and it constitutes the major part of most living things. Man's existence depends upon it, yet water supplies are taken for granted by most individuals. As shown in Figure 3, water evaporates from the occans and is carried as vapor until it condenses and precipitates. Most of the precipitation on the land is used by vegetation, evaporates back to the atmospherc, or runs overland as streamflow. Part enters the soil and bedrock to rccharge water-bearing formations, called aquifers. The water movcs at a varying pacc, depending on its environment, but eventually it returns to the oceans.

If man interrupts or changes the hydrologic cycle the results may have serious effects for many years. Man's alterations of the hydrologic cycle in Montgomery County are discussed in the following pages.

PRECIPITATION

Precipitation is the source of all fresh water in the county. The average precipitation at Norristown is 42.2 inches per year. Elsewhere in the county, the average annual precipitation ranges from 43 inches in the eastern part to 47 inches in the extreme northern part. (U.S. Department of Commerce Environmental Data Service).

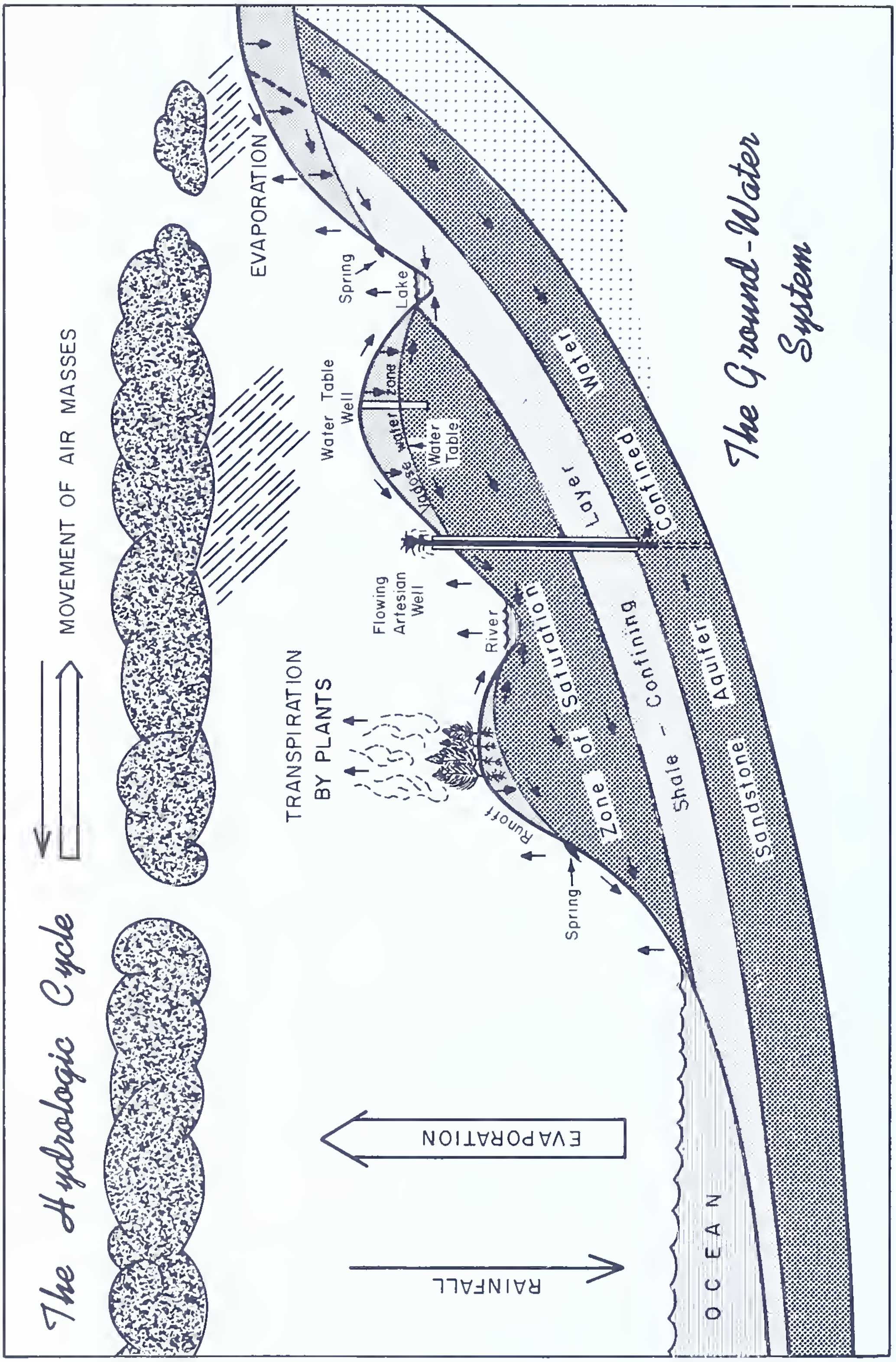


Figure 3. Hydrologic cycle showing movement of water from ocean to land and back to the ocean.

Precipitation is generally well distributed throughout the year. The wettest month is usually August and the driest month October. More than half the annual precipitation falls during the spring and summer, the period which corresponds favorably with the needs of growing plants. During the period of record the amount of monthly precipitation has ranged from more than 17 inches in August to less than 0.50 inch in October.

The average total annual snowfall received in a season in this county ranges from 20 to 30 inches. The larger amounts fall in the eastern and northern parts of the county, where heavy snows are most likely to occur during late winter.

WHERE THE WATER GOES

EVAPOTRANSPIRATION

Evapotranspiration is a collective term describing the return, through the sun's energy, of water to the atmosphere as vapor. Transpiration returns soil moisture to the atmosphere as a product of plant growth, and evaporation changes water directly from a liquid to a vapor.

The estimated mean annual rate of evaporation from surface-water bodies in Montgomery County is about 33 inches. However, the surface area of water bodies in Montgomery County is small, and the water evaporated from them is only a minor part of the hydrologic system. The total loss by evaporation and transpiration is considerable. About 26 inches of the water falling on the county annually is returned to the atmosphere by these processes. (Parker and others, 1964).

STREAMFLOW

Most of the water not lost through evapotranspiration leaves the county as discharge from streams. This amounts to from 15 to 21 inches of the original precipitation. The larger streams and impoundments and the locations of gaging stations in Montgomery County are shown in Figure 4. Identification numbers are those assigned by the U.S. Geological Survey. A summary of discharge data for the four gaging stations is given in Table 1. More detailed information on streamflow can be obtained from Surface Water Records for Pennsylvania (see selected reference list). Several other streams in Montgomery County are also used for public and industrial water supplies.

Figure 4. Location of stream-gaging stations.

GROUND WATER

Much of the water falling on the land surface returns to the atmosphere or reaches the streams as overland runoff. The remainder infiltrates through the soil and through fractures and void spaces in the underlying rock. Its downward movement continues until it reaches the zone of saturation, a zone below which all the interconnected voids are filled with water. This is illustrated in Figure 5. After reaching the zone of saturation the water moves downward and laterally toward lower elevations and eventually returns to the surface, either naturally from springs and seeps or from wells.

Ground water in Montgomery County occurs under both water-table (free, unconfined) and artesian (confined, under pressure) conditions. Water-table conditions are those in which ground water is unconfined

Table 1. *Discharge data of the gaged streams in Montgomery County*

Schuylkill River at Pottstown, Pa. 1-4720
Average discharge, 41 years of record: 1,805 cfs.[1]
Maximum discharge, May 23, 1943: 50,800 cfs.
Minimum discharge, August 13, 1930: 87 cfs.

Perkiomen Creek at Graterford, Pa. 1-4730
Average discharge, 53 years of record: 370 cfs.
Maximum discharge, July 9, 1935: 39,900 cfs.
Minimum discharge, October 5, 1941: 4.7 cfs.

Skippack Creek near Collegeville, Pa. 1-4731.2
Average discharge, 2 years of record: 65.5 cfs.
Maximum discharge, March 7, 1967: 4,620 cfs.
Minimum discharge, September 12, 1967: 0.1 cfs.

Wissahickon Creek at Fort Washington, Pa. 1-4739
Average discharge, 6 years of record: 43.2 cfs.
Maximum discharge, March 7, 1967: 3,490 cfs.
Minimum discharge, September 2, 1963: 2.9 cfs.

[1] Cubic feet per second

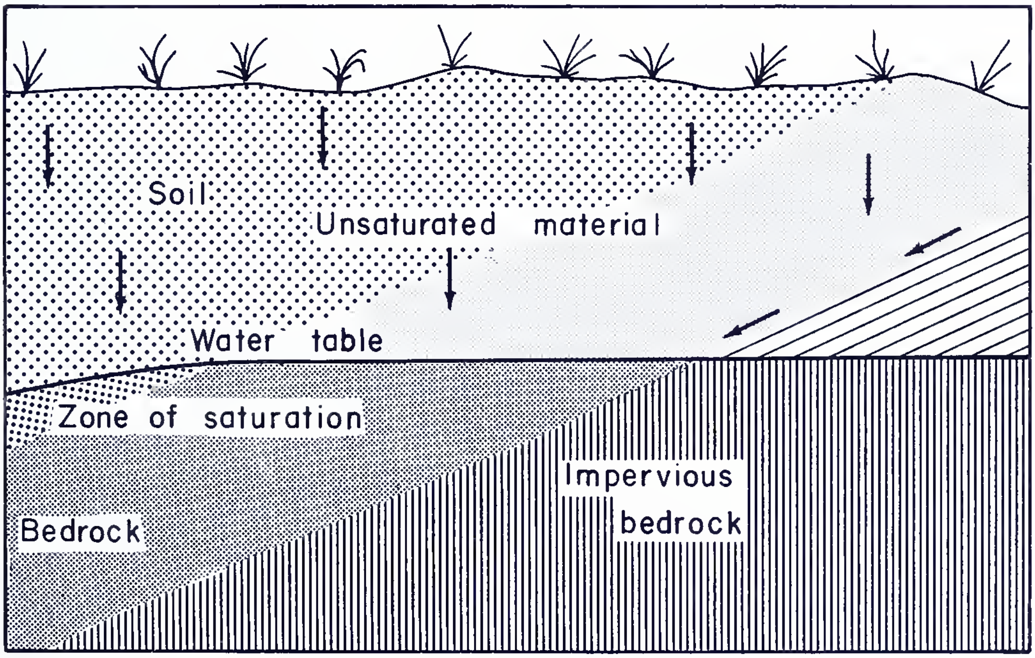


Figure 5. Downward movement of water through soil and rock to the water table.

and the upper surface of the water is free to rise or fall. Artesian conditions exist where the ground water is confined in a permeable (having interconnected openings) formation that is overlain by a relatively impermeable formation. The upper surface is not free to rise or fall, but the water is under enough pressure to rise above the containing aquifer in wells penetrating it. The imaginary surface to which water will rise in wells tapping an artesian aquifer is called the piezometric surface in this report.

The water table fluctuates according to the relative amounts of recharge (additions to the aquifer) and discharge (losses to seeps, springs and wells). Because of the heavy evapotranspiration losses through the growing season (April to October) little recharge reaches the zone of saturation and water levels decline; water levels generally rise throughout the rest of the year.

Water levels in the county are at or near the land surface in the valleys and rise toward the drainage divides. The rate of water level rise, however, is less than that of the land surface, so wells on the higher elevations must be drilled deeper to reach the water table than those in the valleys.

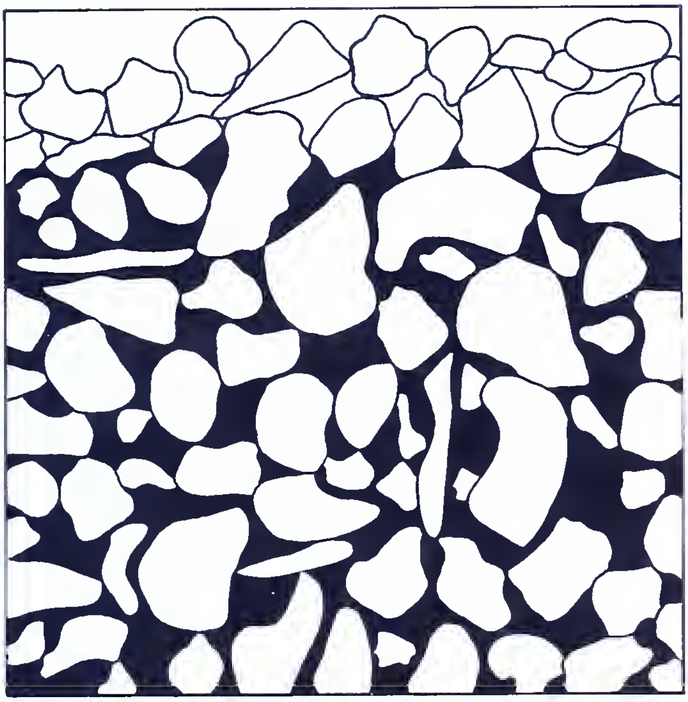
The occurrence and movement of ground water is in and through interconnected openings (Figure 6) either primary or secondary in nature. Primary openings are void spaces between the individual grains of material, such as in sandstone and shale. In a coarse-grained sandstone the openings are relatively large; in a shale the grains and openings are very small. The larger interconnecting openings allow much more ground-water movement than the smaller ones.

Secondary openings are those formed subsequent to the deposition and consolidation of the formations. In Montgomery County they result from the fracture or solution of rock. The fractures are the result of external forces that caused rupture of the rock; solution cavities are formed by the solution and removal, by water, of parts of rocks such as limestone. Large quantities of water move through connected fractures and solution cavities.

HOW AND WHERE THE WATER IS FOUND

SUBSURFACE WATER

Ground water in Montgomery County is found in both artesian and water-table aquifers. These aquifers yield water to wells at various rates which vary over a wide range, both from one geologic formation to another and within the same geologic formation. Well yields range from a fraction of a gallon per minute to more than 1,500 gpm (gallons per minute). Data on seven hundred wells drilled in the various geologic



Primary openings in unconsolidated material

Secondary openings in consolidated rock

Figure 6. How water occurs in the rocks.

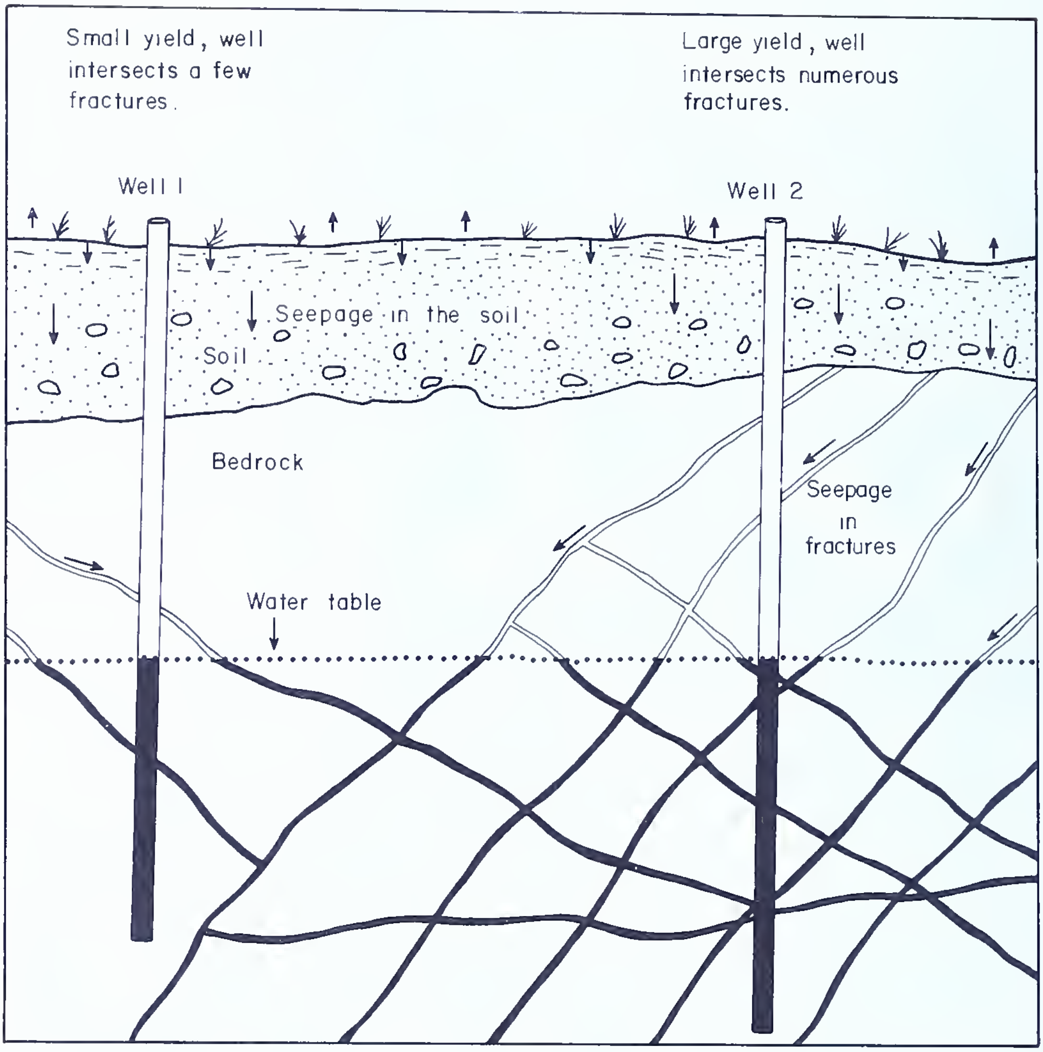


Figure 7. How fractures in bedrock formations will affect the yield of wells.

formations that underlie the county have been described in several published reports. (See Selected References)

When precipitation has reached the zone of saturation it moves by gravity down the hydraulic gradient toward points of discharge. The direction of movement is determined by the slope of the water table or the piezometric surface. The movement of ground water is through interconnected openings in the rock, and, as these openings are normally small, they do not allow rapid movement of water.

The aquifers in Montgomery County are primarily consolidated rocks, and water occurs in fractures, bedding planes, or solution openings. Small amounts of ground water occur in the pore spaces in the weathered

zone but this weathered material is thin and discontinuous. Wells drilled into consolidated rock will yield water if they intersect saturated openings in the rock. This is illustrated in Figure 7. Well No. 1 intercepts only one fracture below the water table, and the yield of this well would be less than the yield of well No. 2 because the latter well intersects several fractures below the water table.

A geologic column for Montgomery County (Table 2) is shown below and is followed by a generalized geologic map. (Figure 8)

Table 2. *Geologic section for Montgomery County, Pennsylvania*

Era, System and Epoch	Formation	Thickness (feet)	Character
Cenozoic Quaternary Holocene	Alluvium	0-10	Soil, sand, gravel, and clay; deposits in stream valleys.
Pleistocene	Pensauken Formation	0-10	Sand, gravel, clay, yellowish-brown; small areal extent.
Tertiary Pliocene (?)	Bryn Mawr Gravel	0-10	Sand and gravel; small areal extent.
Mesozoic Cretaceous	Patapsco Formation	0-10	Clay and sand, highly colored; small areal extent.
Triassic	Diabase	5-1,800	Medium to coarse grained igneous rock, dark gray, occurs as dikes and sills.
	Brunswick Formation	9,000-16,000	Shale, mudstone, sandstone, and conglomerate beds; reddish-brown.
	Lockatong Formation	0-2,000	Argillite, mudstone, and shale; dark gray to black, thick bedded.
	Stockton Formation	1,000-6,000	Shale and siltstone in upper member; sandstone, fine-to coarse-grained, arkosic, middle member; conglomerate lower member.

Table 2. *(Continued)*

Era, System and Epoch	Formation	Thickness (feet)	Character
Paleozoic Ordovician	Conestoga Limestone	500-800	Limestone, impure, thin-bedded upper part; middle dark graphitic phyllite, lower limestone, granular thick-bedded, dark gray.
Cambrian	Elbrook Formation	800	Limestone, fine-grained, light gray to cream-colored, thin-bedded.
	Ledger Dolomite	1,000	Dolomite, granular, gray to bluish gray.
	Harpers Formation	500-800 (?)	Phyllite, fine-grained, greenish-gray, some beds of quartzite and schist.
	Chickies Quartzite	500-1,000	Quartzite, vitreous, light-colored thick-bedded, conglomerate at base.
Precambrian (?)	Wissahickon Formation	—	Schist, albite chlorite, and oligoclase mica, includes hornblende gneiss and phyllite.
Precambrian	Granite gneiss	—	Composed chiefly of quartz, feldspar, biotite, and hornblende.
	Hornblende gneiss	—	Composed of quartz, feldspar, and hornblende.
	Serpentine	—	Soft, fine grained, green.

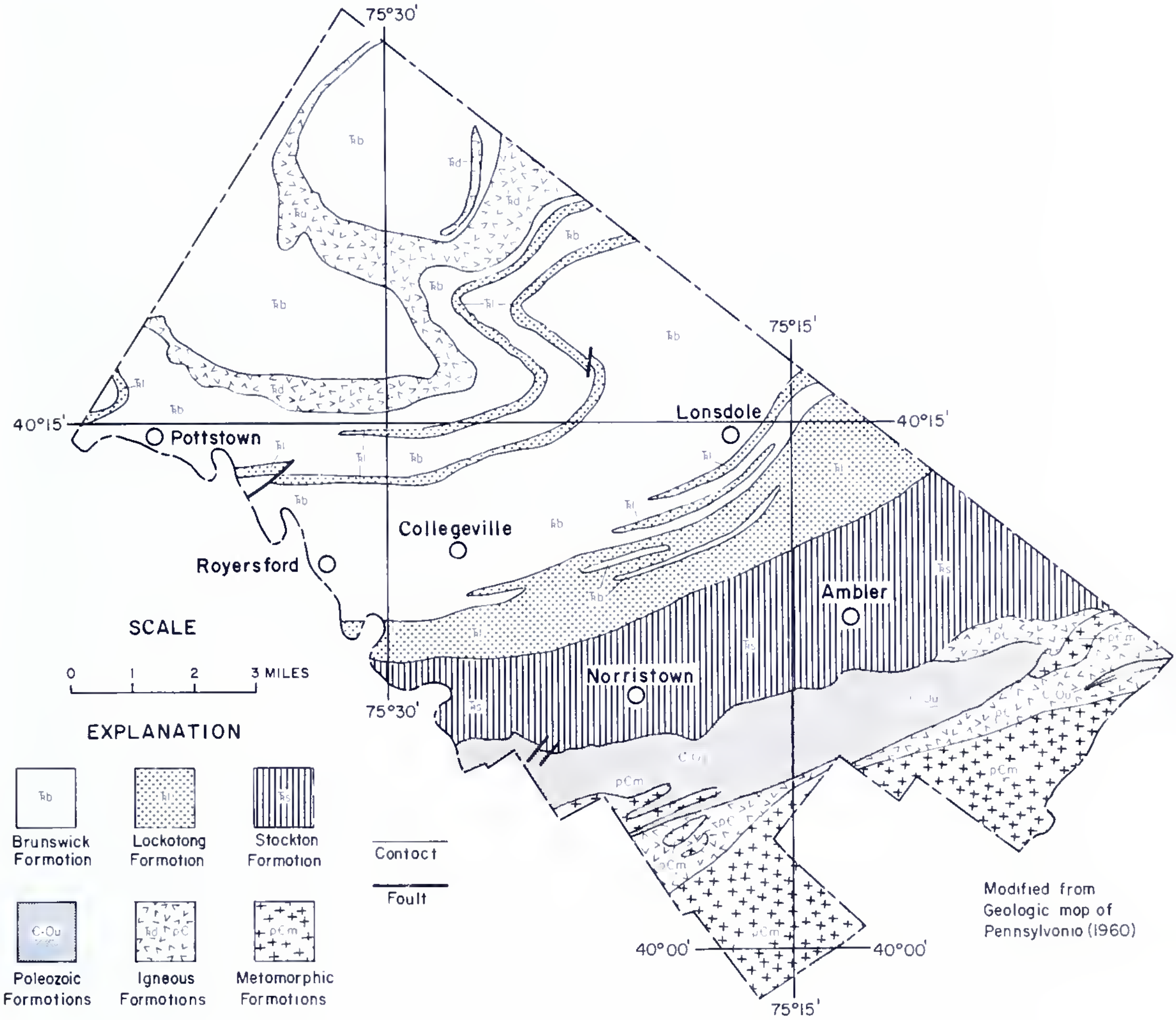


Figure 8. Generalized geologic map.

The water-bearing characteristics of the mapped units are summarized in the following pages.

Brunswick Formation

Lithology and structure

The Brunswick Formation in Montgomery County consists of consolidated reddish-brown shale and sandstone. Along the northern edge of the county conglomerate is interbedded with the shale and sandstone. The beds of the Brunswick Formation generally dip an average of 20° to the north and northwest, but several broad synclines and anticlines

have been superimposed on the major structure. The Brunswick Formation has been cut by many small faults and one or two large ones. There is a well-developed system of nearly vertical joints in many of the beds of the Brunswick Formation. Sample logs of wells in the Brunswick Formation are listed in Table 3.

Water-bearing characteristics

Because pore spaces in the Brunswick Formation are very small, most of the ground water occurs in and moves through secondary openings and the nearby vertical joints that intersect at various angles throughout the formation. The number and width of these vertical joints differ from bed to bed within the formation; thus, some beds yield much more water to wells than others. These vertical joints also allow downward percolation of precipitation to recharge the aquifer.

Table 3. *Sample logs of wells in the Brunswick Formation in Montgomery County, Pennsylvania*

Well Mg-632

Owner: U.S. Geological Survey

Description	Depth (feet)
Soil, red	0 — 2
Shale, red, moderately calcareous; calcite joint filling	2 — 5
Shale, red, slightly calcareous	5 — 10
Shale, red, slightly calcareous; calcite joint filling	10 — 15
Shale, red, slightly calcareous	15 — 18
Shale, red, slightly calcareous; calcite joint filling	18 — 25
Shale, red, moderately calcareous; calcite joint filling	25 — 30
Shale, red, slightly calcareous; calcite joint filling	30 — 40
Shale, red, slightly calcareous	40 — 45
Shale, red, moderately calcareous; calcite joint filling	45 — 52
Shale, red, slightly calcareous; calcite joint filling	52 — 85
Shale, red, moderately calcareous; calcite joint filling	85 — 90
Shale, red, slightly calcareous, micaceous; calcite joint filling	90 — 95
Shale, red, slightly calcareous, micaceous; quartz and calcite joint filling	95 — 100
Shale, red, slightly calcareous, micaceous; calcite joint filling	100 — 110
Siltstone, red, moderately calcareous, micaceous; calcite and quartz joint filling	110 — 120
Shale, red, slightly calcareous; calcite and quartz joint filling	120 — 125
Shale, red, moderately calcareous, micaceous; calcite joint filling	125 — 130
Shale, red, moderately calcareous; calcite joint filling	130 — 135
Shale, red, moderately calcareous	135 — 140

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red, slightly calcareous; calcite joint filling	140 — 170
Shale, red, slightly calcareous; calcite and quartz joint filling	170 — 185
Shale, red, moderately calcareous; calcite joint filling	185 — 200
Siltstone, red, slightly calcareous, micaceous; calcite joint filling	200 — 210
Shale, red, slightly calcareous, micaceous; quartz joint filling	210 — 215
Shale, red, slightly calcareous, micaceous; quartz and calcite joint filling	215 — 220
Shale, red, slightly calcareous; calcite and quartz joint filling	220 — 225
Shale, red, slightly calcareous; calcite joint filling	225 — 235
Shale, red, slightly calcareous	235 — 240
Shale, red; calcite joint filling	240 — 250
Shale, red; calcite and quartz joint filling	250 — 260
Shale, red, slightly calcareous; calcite joint filling	260 — 290
Shale, red, moderately calcareous	290 — 300
Shale, red, slightly calcareous	300 — 310
Shale, red, slightly calcareous; quartz and calcite joint filling	310 — 315
Siltstone, buff, moderately calcareous; red shale; quartz joint filling	315 — 320
Shale, red, slightly calcareous, micaceous; calcite joint filling	320 — 325
Shale, red, slightly calcareous, micaceous; calcite and quartz joint filling	325 — 330
Shale, red, slightly calcareous; calcite joint filling	330 — 335
Shale, red, micaceous; calcite and quartz joint filling	335 — 340
Shale, red, moderately calcareous; calcite and quartz joint filling	340 — 345
Shale, red, moderately calcareous; calcite joint filling	345 — 350
Shale, red, slightly calcareous; calcite joint filling	350 — 360
Shale, red, micaceous; calcite and quartz joint filling	360 — 363
Shale, red, moderately calcareous; calcite joint filling	363 — 370
Shale, red, slightly calcareous	370 — 375
Shale, red, slightly calcareous; calcite joint filling	375 — 379
Shale, green, moderately calcareous	379 — 381
Shale, red, slightly calcareous; calcite joint filling	381 — 385
Shale, red, slightly calcareous	385 — 405
Shale, red, slightly calcareous; calcite joint filling	405 — 425
Shale, red, slightly calcareous	425 — 450
Shale, red, slightly calcareous; calcite joint filling	450 — 460
Shale, red, slightly calcareous; calcite and quartz joint filling	460 — 465
Shale, red, slightly calcareous	465 — 470
Shale, red, slightly calcareous; calcite joint filling	470 — 475
Shale, red, moderately calcareous; calcite joint filling	475 — 480
Shale, red, slightly calcareous	480 — 490
Shale, red, moderately calcareous; calcite joint filling	490 — 500

Well Mg-633

Owner: U.S. Geological Survey

Description	Depth (feet)
Shale, red; quartz joint filling	0 — 5

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red, slightly calcareous, calcite joint filling	5 — 20
Shale, red, moderately calcareous; calcite joint filling	20 — 25
Shale, red, slightly calcareous; calcite joint filling	25 — 30
Shale, red, moderately calcareous	30 — 35
Shale, red, moderately calcareous; calcite joint filling	35 — 40
Shale, red; calcite joint filling	40 — 45
Shale, red, slightly calcareous; calcite joint filling	45 — 55
Shale, red, slightly calcareous; goethite	55 — 60
Shale, red, slightly calcareous; calcite joint filling	60 — 70
Shale, red, slightly calcareous	70 — 90
Shale, red, moderately calcareous; calcite joint filling	90 — 100
Shale, red; calcite joint filling	100 — 105
Shale, red, slightly calcareous; abundant quartz and calcite joint filling. Quartz is in crystals up to half an inch long	105 — 108
Shale, red, slightly calcareous; calcite joint filling	108 — 110
Shale, red, slightly calcareous; abundant calcite joint filling	110 — 112
Shale, red, slightly calcareous; calcite and quartz joint filling and goethite	112 — 115
Shale, red; calcite joint filling	115 — 118
Shale, red	118 — 120
Shale, red, slightly calcareous	120 — 123
Shale, red	123 — 125
Shale, red, moderately calcareous; calcite joint filling	125 — 128
Shale, red, slightly calcareous	128 — 138
Shale, red, slightly calcareous; calcite joint filling	138 — 140
Shale, red, slightly calcareous	140 — 142
Shale, red, slightly calcareous; calcite joint filling	142 — 148
Shale, red, slightly calcareous	148 — 150
Shale, red, slightly calcareous; calcite joint filling and goethite	150 — 152
Shale, red, slightly calcareous; calcite joint filling	152 — 165
Shale, red, slightly calcareous	165 — 168
Shale, red, slightly calcareous; calcite joint filling	168 — 170
Shale, red; calcite joint filling	170 — 172
Shale, red	172 — 175
Shale, red, moderately calcarcous	175 — 178
Shale, red, moderately calcareous; calcitc joint filling	178 — 185
Shale, red; calcite joint filling	185 — 205
Shale, red, slightly calcareous; calcite joint filling	205 — 210
Shale, red; calcite joint filling	210 — 212
Shale, red, slightly calcareous; calcite joint filling	212 — 215
Shale, red, slightly calcareous; calcite and quartz joint filling	215 — 220
Shale, red, slightly calcareous; calcite joint filling	220 — 225
Shale, red; calcite joint filling	225 — 230
Shale, red; calcite and quartz joint filling and goethite	230 — 232
Shalc, red, moderately calcareous; quartz and calcite joint filling	232 — 233
Shale, red; calcite joint filling	233 — 235

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red, moderately calcareous; calcite joint filling	235 — 237
Shale, red; calcite joint filling	237 — 240
Shale, red, slightly calcareous; calcite joint filling	240 — 243
Shale, red, slightly calcareous	243 — 245
Shale, red; calcite joint filling	245 — 263
Shale, red, slightly calcareous; calcite joint filling	263 — 270
Shale, red	270 — 275
Shale, red, slightly calcareous; calcite joint filling	275 — 278
Siltstone, red, moderately calcareous; calcite joint filling	278 — 280
Shale, red, slightly calcareous; calcite joint filling	280 — 283
Shale, red; calcite joint filling	283 — 288
Shale, red, slightly calcareous; calcite joint filling	288 — 290
Shale, red, slightly calcareous	290 — 295
Shale, red; calcite joint filling	295 — 300
Shale, red	300 — 302
Shale, red; calcite joint filling	302 — 307
Shale, red, slightly calcareous, calcite joint filling	307 — 310
Shale, red, moderately calcareous; calcite joint filling	310 — 312
Shale, red, slightly calcareous	312 — 314
Shale, red, slightly calcareous; calcite joint filling	314 — 325
Shale, red, slightly calcareous; quartz joint filling	325 — 327
Shale, red, slightly calcareous	327 — 330
Shale, red	330 — 335
Shale, red; calcite joint filling	335 — 348
Shale, red, slightly calcareous; calcite joint filling	348 — 350
Shale, red, slightly calcareous	350 — 355
Shale, red, slightly calcareous; calcite joint filling	355 — 358
Shale, red; calcite joint filling	358 — 360
Shale, red, moderately calcareous	360 — 362
Shale, red, slightly calcareous; calcite and quartz joint filling	362 — 365
Shale, red; calcite joint filling	365 — 380
Shale, red, moderately calcareous	380 — 383
Shale, red, moderately calcareous, micaceous	383 — 385
Shale, red, slightly calcareous; calcite joint filling	385 — 390
Shale, red, slightly calcareous	390 — 392
Shale, red	392 — 395
Shale, red, slightly calcareous	395 — 402
Shale, red, moderately calcareous; calcite joint filling	402 — 405
Shale, red, slightly calcareous; calcite and quartz joint filling	405 — 408
Shale, red, moderately calcareous	408 — 410
Shale, red, slightly calcareous	410 — 412
Shale, red, slightly calcareous; calcite joint filling	412 — 415
Shale, red, moderately calcareous; calcite joint filling	415 — 417
Shale, red, slightly calcareous; calcite joint filling, pyrite and goethite	417 — 420
Shale, red, slightly calcareous	420 — 422
Shale, red, slightly calcareous; calcite joint filling	422 — 428

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red, slightly calcareous	428 — 430
Shale, red	430 — 432
Shale, red, slightly calcareous; calcite joint filling	432 — 435
Shale, red, moderately calcareous; calcite joint filling	435 — 437
Shale, red; slightly calcareous; calcite joint filling	437 — 460
Shale, red; calcite joint filling	460 — 465
Shale, red; calcite joint filling, pyrite and goethite	465 — 467
Shale, red, slightly calcareous; calcite and quartz joint filling	467 — 470
Shale, red, slightly calcareous	470 — 473
Shale, red, slightly calcareous; calcite joint filling	473 — 497
Shale, red	497 — 500

Well Mg-679

Owner: Souderton Borough

Description	Depth (feet)
Shale, red	0 — 40
Shale, red, moderately calcareous; calcite joint filling	40 — 100
Shale, dark reddish-gray, slightly calcareous	100 — 110
Shale, red, slightly calcareous; calcite joint filling and pyrite	110 — 120
Shale, red, slightly calcareous; calcite joint filling	120 — 130
Shale, dark red, moderately calcareous	130 — 140
Shale, red, slightly calcareous; calcite joint filling	140 — 180
Argillite, blue-gray, slightly calcareous; calcite joint filling. Thin beds of red shale are in this interval	180 — 190
Argillite, blue-gray, moderately calcareous; calcite and quartz joint filling. About 4 feet of this interval is red shale	190 — 200
Sandstone, gray, very fine grained; calcite joint filling and pyrite	200 — 210
Argillite, blue-gray, moderately calcareous; calcite joint filling and pyrite	210 — 230
Argillite, blue-gray, slightly calcareous; pyrite and goethite	230 — 260
Siltstone, blue-gray, slightly calcareous; pyrite	260 — 270
Argillite, blue-gray, moderately calcareous; pyrite. Red shale, moderately calcareous; calcite joint filling and pyrite	270 — 278
Argillite, blue-gray, moderately calcareous; pyrite	278 — 285
Shale, reddish-brown, moderately calcareous; About 4 feet of this interval is blue-gray, moderately calcareous argillite	285 — 308

Well Mg-700

Owner: Stanley G. Flagg, Inc.

Description	Depth (feet)
Fill	0 — 20
Sandstone, buff, fine grained. About half of this interval is red shale	20 — 30
Shale, red, micaceous	30 — 60

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red	60 — 90
Shale, red, slightly calcareous; quartz joint filling	90 — 100
Shale, red, slightly calcareous	100 — 130
Shale, dark brown, slightly calcareous	130 — 140
Shale, red, slightly calcareous	140 — 150
Shale, red, moderately calcareous	150 — 160
Shale, red; calcite joint filling	160 — 170
Shale, red, slightly calcareous	170 — 190
Shale, red, moderately calcareous	190 — 200
Shale, red, moderately calcareous, micaceous; calcite joint filling	200 — 250
Shale, red, micaceous; calcite joint filling	250 — 260
Shale, red, slightly calcareous; calcite joint filling	260 — 280
Shale, gray-brown, slightly calcareous; micaceous; calcite joint filling	280 — 290
Shale, red, slightly calcareous; calcite joint filling	290 — 330
Siltstone, red, slightly calcareous; calcite joint filling	330 — 340
Shale, red, moderately calcareous	340 — 350
Shale, red, moderately calcareous; calcite joint filling	350 — 360
Siltstone, red, moderately calcareous; calcite joint filling	360 — 370
Shale, red, moderately calcareous; calcite joint filling	370 — 390
Shale, red, moderately calcareous; calcite and quartz joint filling	390 — 400
Shale, red, moderately calcareous; calcite joint filling	400 — 456
Sandstone, white, fine grained	456 — 461
Shale, red, moderately calcareous; calcite joint filling	461 — 480
Argillite, blue-gray, moderately calcareous, interbedded with about 3 feet of buff sandstone	480 — 500
Sandstone, light-brown, fine grained	500 — 510
Sandstone, light-brown, medium grained	510 — 520
Shale, brown, slightly calcareous, micaceous; calcite joint filling	520 — 530
Shale, brown, slightly calcareous, micaceous; quartz joint filling	530 — 540
Shale, red, moderately calcareous; calcite joint filling	540 — 560
Shale, red, moderately calcareous; calcite and quartz joint filling	560 — 600
Shale, red, slightly calcareous; calcite joint filling	600 — 610
Shale, red, moderately calcareous; calcite joint filling. About 1 foot of this interval is buff, fine grained sandstone	610 — 620
Shale, red, moderately calcareous; calcite joint filling	620 — 640

Well Mg-704

Owner: Lansdale Municipal Authority

Description	Depth (feet)
Shale, red	0 — 10
Shale, red, slightly calcareous; calcite joint filling	10 — 20
Shale, red	20 — 40
Shale, red, slightly calcareous	40 — 70
Shale, red, slightly calcareous; calcite joint filling	50 — 70
Shale, red, moderately calcareous; calcite joint filling	70 — 80

Table 3. *(Continued)*

Description	Depth (feet)
Shale, red, slightly calcareous; calcite joint filling	80 — 140
Shale, red, moderately calcareous; calcite joint filling	140 — 190
Shale, red, slightly calcareous; calcite joint filling	190 — 200
Shale, red, slightly calcareous; calcite joint filling and pyrite	200 — 210
Shale, red, slightly calcareous; calcite joint filling	210 — 220
Siltstone, red, slightly calcareous; goethite	220 — 230
Argillite, blue-gray to greenish-gray, slightly calcareous; calcite joint filling and goethite	230 — 240
Shale, gray-brown, slightly calcareous; calcite joint filling and goethite	240 — 250
Shale, red, moderately calcareous; calcite joint filling and goethite	250 — 260
Shale, red, moderately calcareous; calcite joint filling	260 — 290
Shale, red, slightly calcareous; calcite joint filling, pyrite and goethite	290 — 310
Shale, red, slightly calcareous; calcite joint filling	310 — 330
Argillite, blue-gray, moderately calcareous; calcite joint filling and pyrite	330 — 360
Argillite, blue-gray, moderately calcareous; calcite joint filling and goethite	360 — 370

Well Mg-725

Owner: Schwenksville Water Co.

Description	Depth (feet)
Shale, red, slightly calcareous; calcite joint filling	0 — 20
Shale, red, slightly calcareous; quartz joint filling, pyrite and goethite	20 — 30
Shale, red, moderately calcareous; calcite joint filling, pyrite and goethite	30 — 40
Shale, red, slightly calcareous; joint filling	40 — 50
Shale, red, a few green spots, moderately calcareous	50 — 60
Shale, red, moderately calcareous. About 4 feet of this interval is purplish-brown	60 — 70
Shale, red, slightly calcareous; calcite joint filling	70 — 80
Shale, red, moderately calcareous; calcite and quartz joint filling	80 — 90
Shale, red, slightly calcareous; quartz joint filling	90 — 100
Shale, red, moderately calcareous; calcite joint filling	100 — 110
Shale, red, slightly calcareous; calcite and quartz joint filling	110 — 120
Shale, red, slightly calcareous; calcite joint filling	120 — 150
Shale, red, slightly calcareous	150 — 160
Shale, red, slightly calcareous; calcite joint filling	160 — 180
Shale, red, slightly calcareous; calcite and quartz joint filling	180 — 190
Shale, red, slightly calcareous; calcite joint filling	190 — 200
Shale, red, moderately calcareous; calcite and quartz joint filling	200 — 210
Shale, red, moderately calcareous; calcite joint filling	210 — 220
Shale, red, slightly calcareous; calcite joint filling	220 — 240
Shale, red; calcite joint filling	240 — 250
Shale, red, slightly calcareous; calcite joint filling	250 — 290

Well depths and yields

The Brunswick Formation is a reliable source of small to moderate supplies of ground water. Some wells yield more than 200 gpm, and if yields of 100 gpm or more are desired wells should be drilled to depths of at least 200 feet. According to Longwill and Wood (1965, p. 12), . . . "wells drilled to depths between 200 and 550 feet deep are most likely to obtain maximum yields."

Sufficient water for domestic purposes can be obtained at almost any location from wells that are drilled 40 or 50 feet below the water table, but yields large enough for industrial and municipal purposes are more difficult to obtain. If large supplies are sought, test wells should be drilled to find the best site for a production well.

Well location and spacing

Wells located in the valleys, where the water table is close to the land surface, have more available drawdown than wells of the same depth located on hills. This is illustrated in Figure 9. Well spacing is generally not critical when water is being pumped for domestic purposes, but wells should be spaced as far apart as is necessary, within economic limits, when wells are pumped for industrial and municipal purposes. Where several pumping wells are closely spaced, the cones of depression coalesce and the interference may be so great that the yield of each well is reduced. Wells less than 2,000 feet apart in the Brunswick Formation have generally shown some interference. In the Brunswick Formation, interference between wells is greatest between wells that are located parallel to the strike of the beds, because the boreholes penetrate the same beds and fracture systems.

Water quality

Ground water in the Brunswick Formation is of the calcium bicarbonate type when the concentrations of dissolved solids are less than 500 mg/l (milligrams per liter) and of the calcium sulfate type when the dissolved solids are greater than 500 mg/l. The median dissolved-solids content is about 300 mg/l. Median hardness as $CaCo^3$ is about 220 mg/l. Almost all the water meets U.S. Public Health Service standards for mineral content.

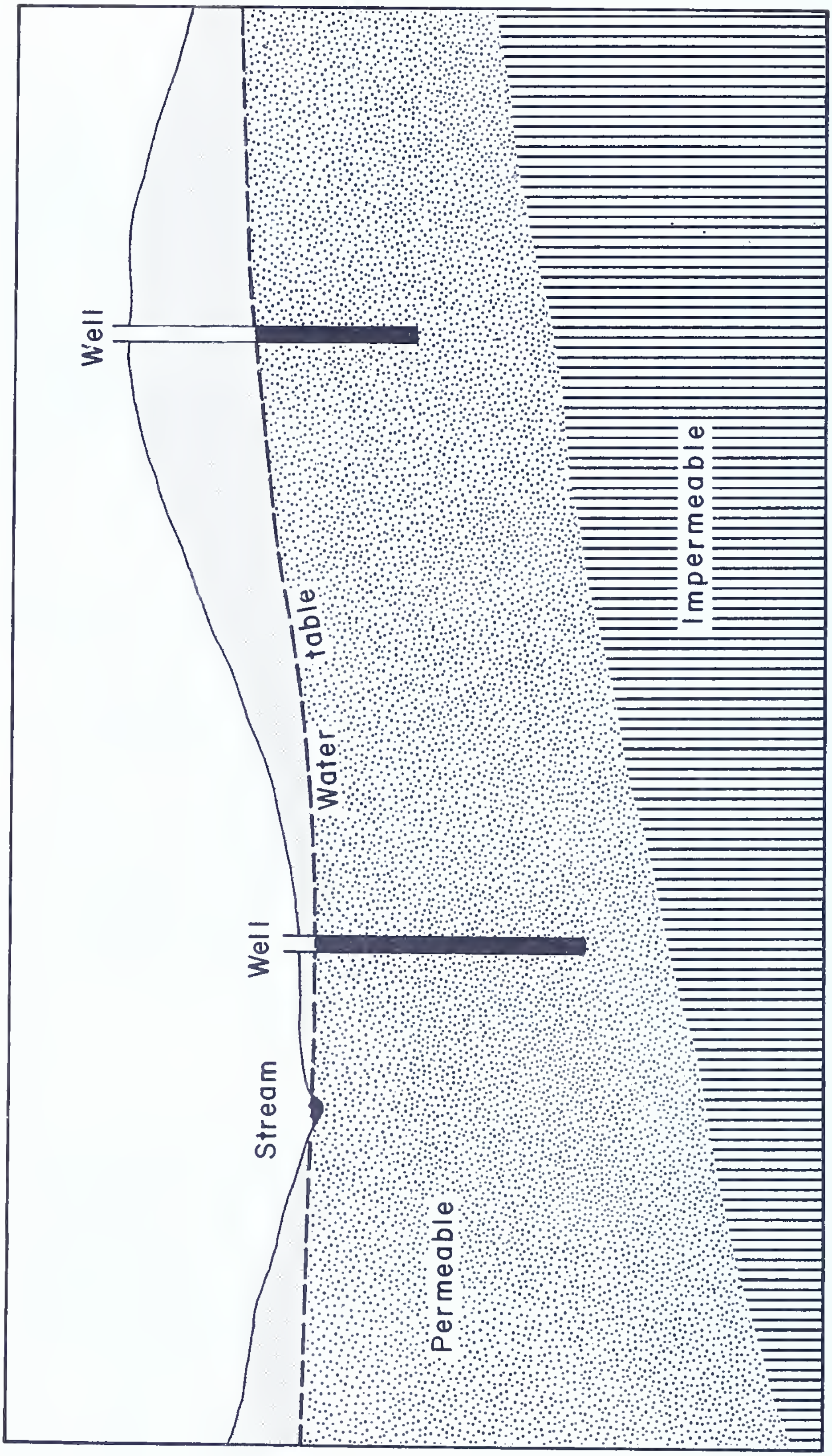


Figure 9. Wells in valleys have more available drawdown than wells on hills.

Lockatong Formation

Lithology and structure

The Lockatong Formation lies immediately below the Brunswick Formation. It consists of thick-bedded argillite (very dense shale and mudstone). The Lockatong Formation is resistant to erosion and forms a low ridge where it is exposed along the south edge of the Brunswick Formation. Thinner beds of similar black argillite are interbedded with the overlying Brunswick Formation. Like the Brunswick Formation, the Lockatong dips to the northwest an average of 20°.

Water-bearing characteristics

The pore spaces in the Lockatong Formation are very small, and most of the ground water moves through a system of interconnected joints and fractures. The fractures are narrower and more widely spaced than those in the Brunswick Formation.

Well depths and yields

The yields of wells in the Lockatong Formation are low because of the smallness and scarcity of fractures. Well yields range from 4 to 40 gpm, and the average yield is about 7 gpm. Yields greater than those required for domestic purposes are not available from wells in this formation. Large-diameter wells drilled in this formation will yield larger volumes of water than small-diameter wells for short periods of time because the amount of water stored in the well is greater in the large-diameter wells. Aside from the storage factor, the drilling of deeper wells in the Lockatong Formation does not materially increase the potential yields of wells. Pumps should be set near the bottom of wells because drawdown is large.

Well location and spacing

Because the Lockatong Formation is resistant to erosion, it forms ridges. Therefore, wells pumping water from this formation will not usually divert water from the streams. The cones of depression developed by pumping wells in the Lockatong Formation are not extensive because of the poor water-bearing characteristics, therefore, interference between wells is not a problem. A typical cone of depression in the Lockatong Formation is shown in Figure 10.

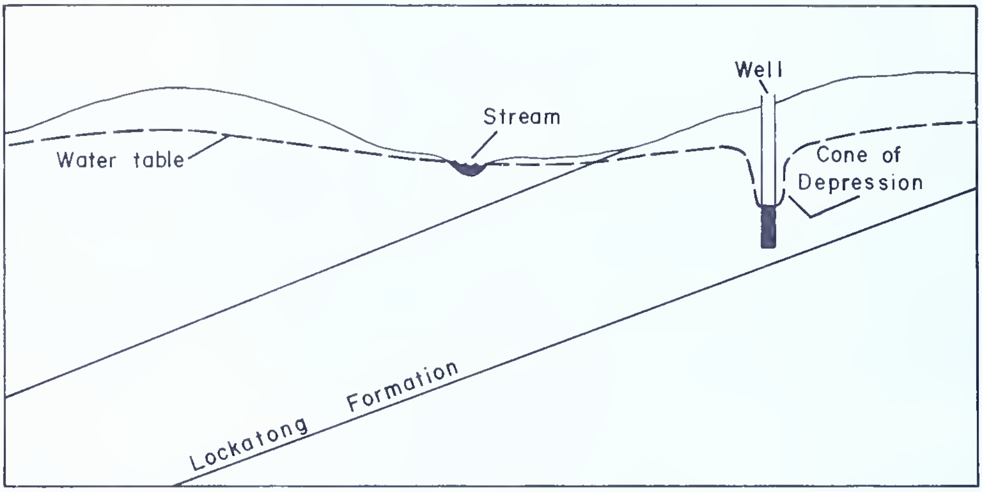


Figure 10. Cone of depression in the Lockatong Formation.

Water quality

The water in the Lockatong Formation is very similar in quality to that in the Brunswick Formation, but it has a slightly lower hardness and dissolved-solids content.

Stockton Formation

Lithology and structure

The Stockton Formation which immediately underlies the Lockatong, is made up of three distinct members: (1) A lower member consisting chiefly of sandstone and conglomerate, (2) a middle member consisting chiefly of sandstone, and (3) an upper member consisting chiefly of red shale. The outcrop of the three members of the Stockton Formation is shown in Figure 11. The formation dips to the north and northwest an average of 12°.

Sample logs of wells in the Stockton Formation are given in Table 4.

Water-bearing characteristics

Water in the Stockton Formation occurs in pore spaces between the grains and in secondary openings (such as fractures) in the rock. The size of the openings between the grains differs with the degree of sorting

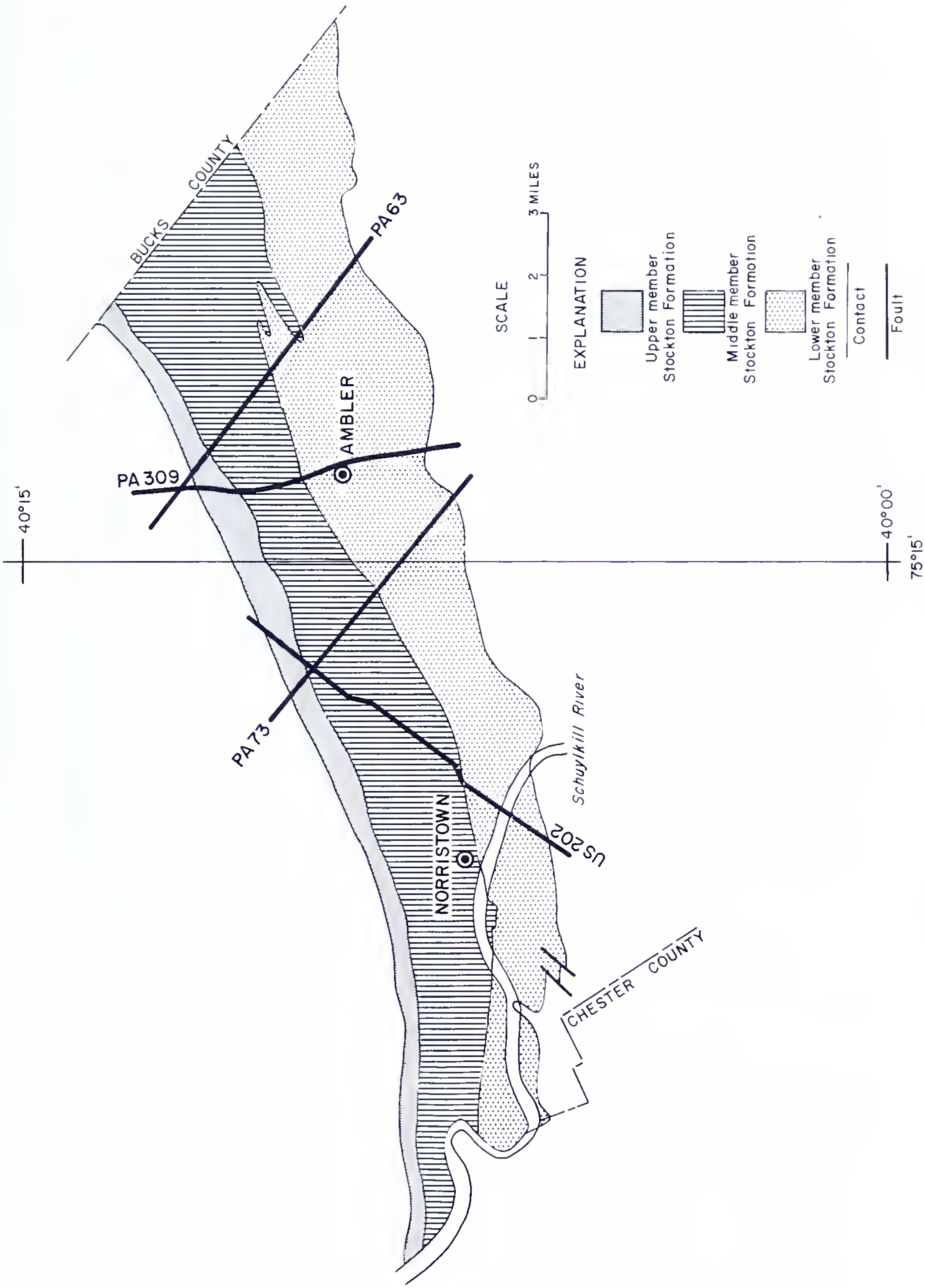


Figure 11. Outcrop of the three members of the Stockton Formation.

of the original material and with the amount of cementation that binds the grains together. The three members differ in their water-bearing characteristics because of the difference in the grain size and the degree of sorting. The middle member consists of well-sorted sandstone and is the best water-producing unit. The lower member is less well sorted and, therefore, does not yield as much water to wells. The upper member of the Stockton Formation is the poorest producer because the fineness of the sediments allows little water storage or movement.

Table 4. *Sample logs of wells in the Stockton Formation in Montgomery County, Pennsylvania*

Well Mg-216

Owner: Hatboro Borough Authority
Driller: Stothoff

Description	Depth (feet)
Soil	0 — 5
Middle arkose member:	
Shale, red	5 — 80
Sandstone, arkosic, gray, fine- to medium-grained, weakly cemented	80 — 100
Shale, red	100 — 176
Sandstone, arkosic, gray, well-cemented	176 — 182
Shale, red	182 — 196
Sandstone, arkosic, gray	196 — 203
Shale, red	203 — 230
Sandstone, arkosic, gray, fine- to medium-grained, weakly cemented	230 — 260
Shale, red, and gray arkosic sandstone	260 — 274
Shale, red	274 — 280
Sandstone, arkosic, gray, and red shale	280 — 297

Well Mg-219

Owner: Hatboro Borough Authority
Driller: Stothoff

Description	Depth (feet)
No Sample	0 — 21
Middle arkose member:	
Siltstone, gray to red, sandy	21 — 38
Sandstone, arkosic, gray, fine- to medium-grained	38 — 78
Sandstone, arkosic, buff-colored, medium-grained; some brown siltstone	78 — 115
Sandstone, arkosic, gray, fine-grained, calcareous	115 — 128
No Sample	128 — 143
Sandstone, arkosic, buff-colored, fine- to medium-grained, calcareous	143 — 158
Siltstone, reddish-brown, sandy, calcareous	158 — 164

Table 4. *(Continued)*

Description	Depth (feet)
Sandstone, arkosic, gray, medium-grained, calcareous	164 — 200
Siltstone, reddish-brown, sandy	200 — 215
Sandstone, arkosic, gray, medium-grained; some reddish-brown siltstone	215 — 265
Sandstone, arkosic, reddish-brown, medium-grained	265 — 275
Sandstone, arkosic, gray, fine- to medium-grained, calcareous	275 — 300

Well Mg-230

Owner: Blue Bell Water Works
Driller: Ridpath and Potter

Description	Depth (feet)
Soil, yellowish-brown	0 — 5
Middle arkose member:	
Siltstone, grayish-red, weakly cemented	5 — 25
Sandstone, arkosic, light-brown, very fine to fine-grained	25 — 40
Siltstone, grayish-red, firmly cemented	40 — 65
Sandstone, arkosic, pale-brown, fine- to coarse-grained	65 — 89
Siltstone, brownish-gray	89 — 100
Sandstone, arkosic, brownish-gray, medium-grained, weakly cemented; some brownish-gray siltstone	100 — 120
Siltstone, reddish-brown and brownish-gray	120 — 155
Sandstone, arkosic, pale-orange, medium- to coarse-grained	155 — 160
Middle arkose member—Continued:	
Siltstone, brownish-gray and grayish-red	160 — 175
Sandstone, arkosic, pale-brown, fine-to medium-grained	175 — 195
Siltstone, grayish-red, sandy, firmly cemented	195 — 200
Sandstone, arkosic, brownish-gray and yellowish-brown, very fine to fine-grained, firmly cemented	200 — 235
Siltstone, brownish-gray, sandy, firmly cemented	235 — 250

Well Mg-270

Owner: Blue Bell Water Works
Driller: Ridpath and Potter

Description	Depth (feet)
Silt, Clayey, light-brown	0 — 20
Middle arkose member:	
Sandstone, arkosic, pale-brown, medium-grained	20 — 27
Silt, brown, clayey	27 — 32
Sandstone, arkosic, yellowish-brown, coarse-grained	32 — 42

Table 4. *(Continued)*

Description	Depth (feet)
Siltstone, brown	42 — 52
Sandstone, arkosic, pale-brown, very fine-grained	52 — 62
Shale, brown, silty, calcareous	62 — 72
Sandstone, arkosic, pale-brown, medium-grained	72 — 102
Sandstone, arkosic, yellow, fine-grained	102 — 112
Sandstone, arkosic, grayish-yellow, medium- to coarse-grained	112 — 122
Sandstone, arkosic, yellowish-gray, fine-grained	122 — 142
Sandstone, arkosic, brownish-gray, very fine-grained	142 — 176
Sandstone, arkosic, brownish-gray, fine- to medium-grained	176 — 203
Siltstone, brownish-gray	203 — 210
Sandstone, arkosic, light-gray, medium-grained	210 — 235
Shale, silty, brownish-gray	235 — 241
Sandstone, arkosic, light-gray	241 — 258
Shale, silty, light-gray, calcareous	258 — 270
Sandstone, arkosic, light-gray	270 — 282
Shale, grayish-red, silty, calcareous	282 — 300
Sandstone, arkosic, grayish-red, medium- to coarse-grained, calcareous	300 — 310

Well Mg-275

Owner: Horsham Township Authority
Driller: Unknown

Description	Depth (feet)
No sample	0 — 50
Middle arkose member:	
Sandstone, arkosic, grayish-red, very fine and fine-grained, clayey	50 — 150
No sample	150 — 160
Sandstone, arkosic, gray, fine-grained, clayey	160 — 170
Limestone, gray, fine-grained	170 — 180
Sandstone, arkosic, brownish-gray, medium-grained	180 — 197
Sandstone, arkosic, grayish-red, very fine and fine-grained	197 — 270
Siltstone, grayish-red, sandy	270 — 350

Well Mg-276

Owner: Horsham Township Authority
Driller: Unknown
Middle arkose member:

Description	Depth (feet)
Siltstone, red, some very fine gray sandstone	0 — 12
Sandstone, arkosic, brown	12 — 25
Arkose, gray, medium-grained	25 — 50
Siltstone, red	50 — 72

Table 4. *(Continued)*

Description	Depth (feet)
Arkose, gray, medium- to coarse-grained	72 — 80
Arkose, gray, medium-grained	80 — 90
Sandstone, arkosic, yellowish-brown, medium-grained	90 — 140
Siltstone, red, hard; some medium-grained gray arkose	140 — 230
Arkose, gray, fine-grained	230 — 250
Sandstone, arkosic, yellowish-brown, medium-grained	250 — 298
Sandstone, arkosic, yellowish-brown, medium-grained; grayish-red siltstone	298 — 320
Sandstone, arkosic, brown, medium-grained	320 — 340

Well Mg-285

Owner: Fort Washington Industrial Park
Driller: Pennsylvania Drilling Co.

Description	Depth (feet)
Soil, yellowish-brown, sandy	0 — 5
Lower akrose member:	
Siltstone, reddish-brown	5 — 55
Sandstone, arkosic, reddish-brown, fine-grained, silty	55 — 65
Sandstone, arkosic, reddish-brown, medium-grained	65 — 105
Sandstone, arkosic, pale-red, coarse-grained	105 — 115
Sandstone, arkosic, grayish-red, fine- to medium-grained	115 — 145
Sandstone, arkosic, pale-red, medium- to coarse-grained	145 — 175
Sandstone, arkosic, pale-red, very fine to medium-grained	175 — 180
Sandstone, arkosic, pale reddish-brown, medium- to coarse-grained	180 — 198
Siltstone, grayish-red, sandy	198 — 199
Sandstone, arkosic, pale reddish-brown, medium- to coarse-grained	199 — 215
No sample	215 — 220
Siltstone, grayish-red, sandy	220 — 225
No sample	225 — 230
Chickies quartzite:	
Quartzite, white, gray, and red	230 — 290

Well Mg-290

Owner: Borough of Ambler
Driller: Ridpath and Potter
Lower arkrose member:

Description	Depth (feet)
Arkose, gray, medium-grained	0 — 5
Arkose, brown, coarse- to very coarse-grained	5 — 20
Arkose, brown, medium- to coarse-grained	20 — 93
Arkose, brown, medium-grained	93 — 110
Siltstone, grayish-red	110 — 120

Table 4. *(Continued)*

Description	Depth (feet)
Arkose, brown, medium- to coarse-grained	120 — 135
Diabase; red siltstone	135 — 140
Arkose, brown, coarse-grained	140 — 144
Arkose, gray, medium- to coarse-grained	144 — 161
Arkose, yellowish-brown, coarse-grained	161 — 171
Arkose, yellowish-brown, medium- to coarse-grained	171 — 175
Arkose, gray, medium-grained	175 — 185
Arkose, yellowish-brown, coarse-grained	185 — 195
Shale, grayish-red	195 — 198
Arkose, yellowish-brown and gray, coarse- to very coarse-grained	198 — 250
Arkose, medium- to coarse-grained	250 — 276
Arkose, brownish-gray, fine grained; red siltstone	276 — 286
Siltstone, red	286 — 344
Arkose, coarse- to very coarse-grained	344 — 354
Arkose, medium- to coarse-grained; grayish-red siltstone; diabase	354 — 384
Arkose, yellowish-brown, coarse-grained; grayish-red siltstone	384 — 400
Arkose, pale-orange, medium- to coarse-grained; red siltstone	400 — 410
Siltstone, red	410 — 440
Arkose, gray, coarse-grained; red shale	440 — 450
Arkose, gray, medium-grained	450 — 470
Siltstone, grayish-red	470 — 490
Arkose, gray, medium-grained	490 — 500

Well Mg-300

Owner: North Wales Water Authority
Driller: Ridpath and Potter
Lockatong formation:

Description	Depth (feet)
Shale, gray	0 — 30
Shale, dark grayish-red; dark-gray shale	30 — 60
Stockton formation:	
Upper shale member:	
Shale, grayish-red	60 — 80
Siltstone, grayish-red; some fine-grained arkosic sandstone	80 — 90
Shale, grayish-red	90 — 355
Sandstone, arkosic, white, fine-grained	355 — 360
Arkose, light-gray, fine- to medium-grained; some red shale	360 — 390
Shale, grayish-red; some grayish-red siltstone	390 — 450
Arkose, light-gray, fine- to medium-grained	450 — 495
Limestone, gray	495 — 500
Sandstone, arkosic, medium-grained	500 — 505
Shale, grayish-red	505 — 520
Sandstone, arkosic, brownish-gray, fine- to medium-grained	520 — 550

Table 4. *(Continued)*

Well Mg-465

Owner: Arvid E. Lyden
Driller: Ridpath and Potter

Description	Depth (feet)
Soil	0 — 2
Lower arkose member:	
Sandstone, arkosic, yellowish-brown, medium- to coarse-grained	2 — 22
Sandstone, arkosic, pale-brown, fine- to medium-grained	22 — 62
Sandstone, arkosic, gray, very coarse-grained	62 — 90
Sandstone, arkosic, brown, very fine-grained	90 — 97
Sandstone, arkosic, brown, medium-grained	97 — 130

Well Mg-489

Owner: U.S. Naval Air Station
Driller: Pennsylvania Drilling Co.

Description	Depth (feet)
Soil, reddish-brown, sandy	0 — 7
Middle arkose member:	
Sandstone, arkosic, yellowish-brown, fine- to medium-grained	7 — 17
Siltstone, grayish-red	17 — 21
Sandstone, arkosic, yellowish-brown, fine- to medium-grained	21 — 29
Sandstone, arkosic, grayish-red, fine-grained	29 — 33
Limestone, light-gray, clayey	33 — 41
Sandstone, arkosic, yellowish-brown, fine-grained	41 — 48
Sandstone, arkosic, yellowish-brown, medium- to coarse-grained	48 — 50
Sandstone, arkosic, grayish-orange, fine- to medium-grained	50 — 60

Well Mg-490

Owner: U.S. Naval Air Station
Driller: Philadelphia Drilling Co.

Description	Depth (feet)
No sample	0 — 22
Middle arkose member:	
Sandstone, arkosic, grayish-orange and yellowish-brown, very fine- to medium-grained, silty	22 — 32
Siltstone, pale-brown and grayish-orange, sandy	32 — 41
Sandstone, arkosic, yellowish-brown, very fine- to fine-grained	41 — 47
Siltstone, brownish-gray, sandy	47 — 51
Arkose, yellowish-gray, very fine- to medium-grained	51 — 67
Siltstone, gray and grayish-red, sandy	67 — 75
Sandstone, arkosic, grayish-orange, very fine- to coarse-grained	75 — 120

Table 4. *(Continued)*

Description	Depth (feet)
Siltstone, arkosic, grayish-orange and brown, very fine- to medium-grained	140 — 158
Siltstone, gray	158 — 165
Sandstone, arkosic, grayish-orange, medium- to coarse-grained	165 — 178
Siltstone, grayish-red; some orange arkosic sandstone	178 — 185

Well Mg-495

Owner: American Chemical Paint Co.
Driller: Ridpath and Potter
Upper shale member:

Description	Depth (feet)
Soil and clay	0 — 17
Sandstone, arkosic, light-gray, fine- to medium-grained	17 — 20
Shale, grayish-red, silty	20 — 39
Arkose, yellowish-orange, fine- to medium-grained	39 — 48
Shale, grayish-red, silty	48 — 110
Sandstone, arkosic, grayish-red and brownish-gray, fine-grained	110 — 130
Shale, grayish-red	130 — 150
Middle arkose member:	
Sandstone, arkosic, pale-brown, fine- to medium-grained	150 — 160
Sandstone, arkosic, pale-brown, very fine to fine-grained; some red shale	160 — 180
Arkose, gray, fine- to medium-grained	180 — 190
Sandstone, arkosic, brown, medium- to coarse-grained	190 — 200
Siltstone, grayish red	200 — 210
Siltstone, arkosic, pale-brown, fine- to medium-grained	210 — 245
Shale, grayish-red, silty	245 — 260
Sandstone, arkosic, yellowish-brown, medium-grained	260 — 266

Well Mg-499

Owner: Borough of Ambler
Driller: Ridpath and Potter
Lower arkose member:

Description	Depth (feet)
Shale, brown and grayish-red	0 — 20
Sandstone, arkosic, brownish-gray and yellowish-brown, very fine- to fine-grained	20 — 30
Siltstone, grayish-brown	30 — 40
Sandstone, arkosic, grayish-red, very fine-grained	40 — 42
Shale, grayish-red, silty	42 — 52
Sandstone, arkosic, light-gray, fine- to medium-grained	52 — 72
Shale, grayish-red, silty	72 — 82

Table 4. *(Continued)*

Description	Depth (feet)
Sandstone, arkosic, light-gray, medium- to coarse-grained	82 — 115
Sandstone, arkosic, pale-brown, medium- to coarse-grained	115 — 172
Shale, grayish-red, silty	172 — 175
Sandstone, arkosic, gray, coarse-grained	175 — 185
Arkose, light-gray, medium- to coarse-grained	185 — 225
Arkose, yellowish-brown, fine- to medium-grained	225 — 235
Arkose, yellowish-brown, medium- to coarse-grained	235 — 300

Well Mg-500

Owner: Borough of Ambler
Driller: Ridpath and Potter

Description	Depth (feet)
Soil	0 — 5
Lower arkose member:	
Sandstone, arkosic, yellowish-orange, very coarse grained, conglomeratic	5 — 28
Shale, grayish-red, sandy	28 — 40
Sandstone, arkosic, pale-orange, coarse- to very coarse-grained	40 — 70
Sandstone, arkosic, brown, fine-grained	70 — 110
Siltstone, brown, sandy	110 — 120
Sandstone, arkosic, gray, medium- to coarse-grained; some red shale	120 — 150
Shale, grayish-red	150 — 190
Sandstone, arkosic, pale-brown, fine- to medium-grained	190 — 220
Shale, grayish-red	220 — 230

Well Mg-532

Owner: Selas Corporation of America
Driller: Ridpath and Potter

Description	Depth (feet)
Soil, yellowish-brown	0 — 5
Lower arkose member:	
Siltstone, reddish-brown, pebbly	5 — 50
Chickies quartzite:	
Quartzite	50 — 184

Well Mg-533

Owner: A. F. Picolet d'Hermillion
Driller: Ridpath and Potter

Description	Depth (feet)
Soil	0 — 1

Table 4. *(Continued)*

Description	Depth (feet)
Lower arkose member:	
Silt, dark yellowish-brown	1 — 20
Sandstone, arkosic, brown, very fine- and fine-grained	20 — 32
Sandstone, arkosic, grayish-brown, fine- to coarse-grained	32 — 60
Sandstone, arkosic, brown, coarse- to very coarse-grained; some brown siltstone	60 — 100
Sandstone, arkosic, brown, medium- to coarse-grained	100 — 110
Shale, grayish-red, silty	110 — 112
Sandstone, arkosic, yellowish-brown, coarse-grained	112 — 134

Well depths and yields

The highest yields and specific capacities (yield per unit of draw-down) reported are for wells tapping the middle sandstone member. The average reported for wells in this member is 131 gpm. Next in order of water-yielding capacity is the lower member of the formation, with an average yield of 106 gpm. The lowest average yields (19 gpm) and specific capacities are those reported for wells drilled in the upper shale member. In some of the tests made on wells tapping the Stockton Formation, it was noted from brine tracing tests that some zones were thieving water from zones of higher artesian head. That is, water from a zone of higher artesian head is entering the well, moving up or down to a zone of lower head, and flowing back into the rock.

Well location and spacing

Wells drilled in the Stockton Formation should be located where they will penetrate the greatest saturated thickness of the most permeable bed. This means that a well should not be drilled on the outcrop of the permeable bed but, rather, at a location downdip from the outcrop. This might even require that a well be started in the least permeable bed. Data concerning proper well spacing are lacking, but wells should be as far apart as practicable.

The topography in the area underlain by the Stockton Formation gives good clues concerning its lithology. The more erosion-resistant, coarse-grained beds of the formation stand as ridges; the softer sediments have been more deeply eroded and underline the valleys. Wider ridges tend to indicate the presence of thicker, coarse-grained sections of the

Stockton and, probably, better sources of water. The best sites for high-yielding wells can be located by combining this information with the knowledge that the formation dips to the northwest. The cross section in Figure 12 shows an application of this knowledge. Well A penetrates the permeable, high-yielding bed as well as the lower impermeable bed. Well B is drilled to the same depth, but, being downdip from the outcrop area, it penetrates a greater thickness of the permeable bed and is likely to yield more water. Penetration of the higher yielding members of the Stockton Formation is more important than well depth.

Water quality

Ground water in the Stockton Formation in Montgomery County is largely of the calcium bicarbonate type. The median dissolved-solids content is 200 mg/1. Median hardness as $CaCO_3$ is 130 mg/1. Water in the rural areas has the lowest median dissolved-solids content, and water in urban areas has the highest. This indicates that contaminants are entering the Stockton Formation in the urban areas.

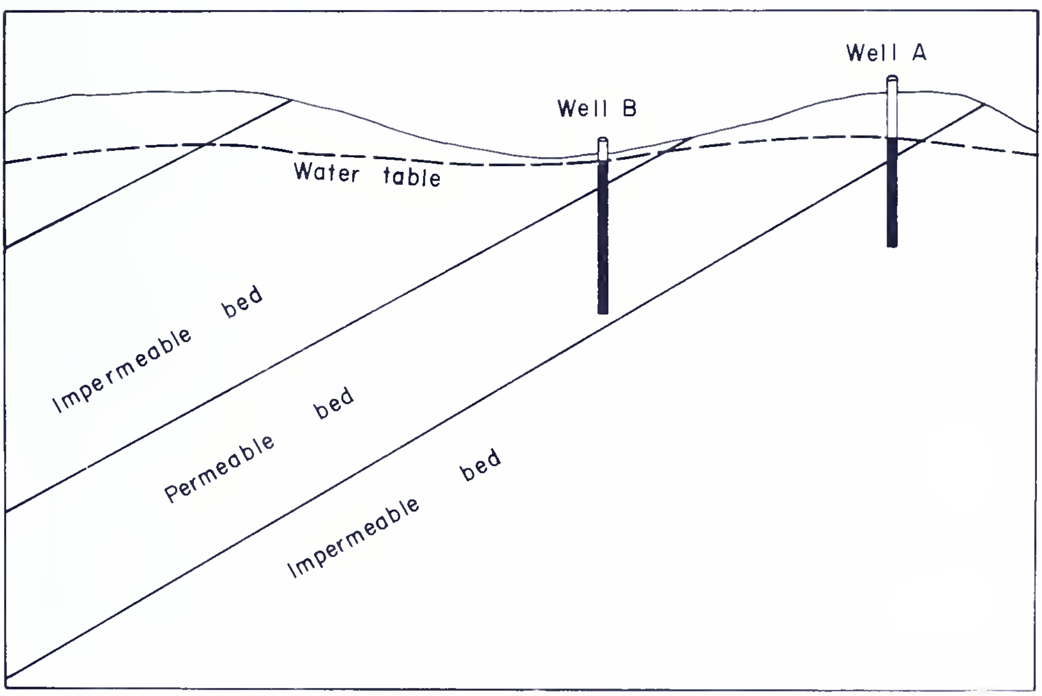


Figure 12. Well (B) drilled to take advantage of more saturated permeable material.

Paleozoic Rocks

Lithology and structure

Rocks of Paleozoic age underlie the above-mentioned formations, except in the eastern part of the county. Where Paleozoic rocks are exposed in the southeastern part of the county, they consist of limestone and dolomite and sediments that have been metamorphosed (altered by heat and pressure) into very hard, erosion-resistant rock. The beds have been extensively folded and faulted.

Water-bearing characteristics

Most of these formations are so well cemented that little or no interconnected pore space remains. As a result, most water occurs in and moves through secondary openings. In the metamorphosed rocks, these openings consist of fractures; in the carbonate rocks the openings are usually fractures that have been enlarged by solution. The weathered surface of these rocks yields very small amounts of ground water. Thicker deposits of weathered material might occur in stream valleys, and in these areas the water contained in this material would add to the ground-water storage.

Well depths and yields

Most of the wells drilled in Palezoic rocks range in depth from 65 to 600 feet. The yields of wells tapping the secondary openings are directly related to the size and number of saturated openings penetrated by the well; both the size and number of these openings decrease as depth increases, except in the carbonate rocks. Therefore, if a significant amount of water is not obtained by drilling to a depth of 300 feet it would be better to redrill at another site than to drill deeper.

Well yields from the more permeable carbonate rocks range from 25 to more than 1,500 gpm; the larger yields occur where saturated, well-developed solution channels are tapped. The yields of wells drilled in the quartzites or the denser carbonate rocks are usually low, ranging from 2 to 10 gpm; occasionally wells are drilled that yield almost no water at all.

Well location and spacing

Very few data are available to serve as a guide in locating wells in Paleozoic rocks. The spacing of wells to minimize interference between

wells would depend on the number and size of the saturated solution openings encountered in each well. The location of saturated solution openings cannot readily be determined at the land surface; therefore, test drilling is recommended before the permanent well is drilled. A pumping test would help in determining the proper well spacing.

Water quality

Ground-water quality differs greatly from one unit to another in the Paleozoic rocks. Water from some of the quartzites has a low dissolved-solids content that ranges from 32 to 51 mg/1, and it is low in hardness, which ranges from 15 to 52 mg/1. Dissolved solids in water from the Paleozoic carbonate rocks range from 198 to 243 mg/1, and the hardness ranges from 198 to 270 mg/1.

Igneous Rocks

Lithology and structure

Relatively young igneous rocks have intruded the Triassic rocks in the northern part of Montgomery County, and older igneous rocks are exposed in the southern end of the county. The younger igneous rocks occur as dikes and sills (tabular or sheetlike bodies), which were intruded into the Brunswick Formation. These intrusives are fine to medium-grained diabase. The older, Precambrian igneous rocks are coarse-grained granitic rocks. The total outcrop area of all igneous rocks in Montgomery County is small.

Water-bearing characteristics

Ground water in the igneous rocks occurs in the fracture systems that developed in these rocks after they solidified. Fractures in these igneous rocks are usually narrow and widely spaced and do not extend to great depths.

Well depths and yields

Only small yields can be expected from wells tapping the igneous rocks. Domestic supplies can be obtained, but some failures can be expected. If a significant amount of water has not been obtained at 200 feet it would be better to drill at another site. Below 100 feet very little water is obtained by wells in the diabase. Because the yields from these rocks are low, the spacing and location of wells is of little importance.

Water quality

The quality of the water from the igneous rocks is gencrally good. Water from some wells in the Triassic diabase contained as much as 0.5 mg/1 iron. The total dissolved-solids content and hardness is low.

Metamorphic Rocks

Lithology and structure

The metamorphic rocks in Montgomery County consist of gneiss and schist. The upper surface of these rocks has been weathered and is soft, but at depth the rocks are dense and hard.

Water-bearing characteristics

Ground water is found in the fractures in the metamorphic rocks but the fractures are small and widely spaced, and they become smaller with depth.

Well depths and yields

The metamorphic rocks are poor sources of water. The amount of water yielded to wells is small, on the order of 1 or 2 gpm, and many failures have occurred. If a significant amount of water has not been obtained at 300 feet it would be better to redrill at another site. Yields of 50 gpm have been obtained from a few wells in the metamorphic rocks.

Water quality

The quality of water in metamorphic rocks differs considerably from place to place. In some areas water in these rocks is very highly mineralized and is not used. Chemical analyses of ground water in Montgomery County are presented in Table 7.

SURFACE-WATER BODIES

Montgomery County is on the drainage divide between the Delaware River and the Schuylkill River. The largest tributary to the Schuylkill in Montgomery County is Perkiomen Creek, which drains the northern half of the county. Unami Creek, Skippack Creek, and Swamp Creek are tributaries of Perkiomen Creek. Wissahickon Creek drains

the southern part of the county. The southeastern part is drained by streams that flow into the Delaware River above the Schuylkill River.

Green Lane Reservoir, near the headwaters of Perkiomen Creek, is the largest impoundment in Montgomery County and is operated by the Philadelphia Suburban Water Company. Two proposed reservoirs on Skippack Creek and East Branch of Perkiomen Creek would supply water to the central part of the county. A proposed reservoir on Unami Creek near the Bucks County line would also supply water to central Montgomery County.

HOW MAN HAS CHANGED THE HYDROLOGIC SYSTEM

PRESENT STATUS OF DEVELOPMENT

The hydrologic system in Montgomery County began to change early in the life of the area. Initially, homes were located near readily available water supplies, such as streams and springs. For several reasons, shallow wells soon supplanted these sources: increased population along streams caused pollution; many streams dried up in the summer; high water usually carried a heavy sediment load; and people wished to build homes farther from streams. Eventually, almost every house had a shallow dug well from which water was withdrawn from the upper few feet of the aquifer. As the population increased, many individually-owned wells were abandoned, and public-supply wells were installed. These public-supply wells were, in most cases, drilled wells that pumped water from deep aquifers. Also, several springs were developed for use in the municipal systems. Pollution of the shallow part of the ground-water reservoir by water from septic tanks eventually forced the abandonment of many more wells tapping the upper parts of the aquifers. These wells were replaced by deeper public-supply and industrial wells. As the demand for water increased, wells became concentrated and ground-water levels in the central part of the county started to decline. Waste water is still discharged to septic tanks in many of the housing developments, and pollution of the shallow part of the ground-water reservoir is serious. One means to reduce pollution from septic tanks is to install sanitary sewers in the suburban areas. This will, of course, increase runoff and reduce the recharge to the ground-water reservoir. Some additional lowering of the ground-water levels may result.

Where municipalities and industries are using surface water, they not only reduce the flow of the streams—they also raise the temperature of

the water they return to the streams. Also, pollution is discharged into the streams in the form of sewage and industrial waste.

GROUND-WATER PUMPAGE

Several Montgomery County municipalities and urban developments use ground water for public supplies. The locations of these communities and other communities using surface water are shown in Figure 13, and ground-water pumpage is summarized in Table 5. Other municipalities in Montgomery County use ground water that comes from wells located in another county. The Philadelphia Suburban Water Company supplies water to several areas in the county, but not all of their supply is from ground water.

Figure 13. Locations of towns and sources of their water supply.

It is reported that 4.7 mgd (million gallons per day) of ground water is pumped from the Stockton Formation in Montgomery County. Of this amount, 3.2 mgd is for public supply and 1.5 mgd is for industrial use. Total withdrawal of water from the Brunswick Formation in Montgomery County is estimated to be 11.5 mgd. The total pumpage from the other formations in the county is estimated to be 3.0 mgd.

Table 5. *Summary of ground-water pumpage for municipal and urban developments in Montgomery County, Pennsylvania*

Supplier	Number of wells	Number of springs	Average daily yield for 1967 in millions of gallons
Borough of Ambler	6	1	2.25
Audubon Water Co.	3	—	.09
Collegeville	4	—	.20
Dublin Water Co.	5	—	.09
East Greenville*	1	—	.17
East Norristown Water Co.	2	—	.01
Hatboro Borough	12	—	1.10
Hatfield Borough	4	—	.26
Hatfield Township			
Colman Water Co.	2	—	.04
Lansdale	17	—	1.75
North Wales Water Authority	4	—	4.0
Pennsburg	2	—	.36
Red Hill	—	1	.40
Schwenksville Water Co.	3	—	.07
Souderton	6	—	.36
Telford	3	—	.25
Whitpain Township			
Blue Bell Water Co.	4	—	.44

* also uses water from Perkiomen Creek.

Additional supplies of ground water could be developed in many parts of Montgomery County. A map of the county (Plate 1) shows typical yields of wells. Much of the area in the northern and western parts of the county, where moderate yields are obtained, could be developed further.

Data for 887 wells are listed in Table 6, and the location of selected wells are shown in Plate 2.

SURFACE-WATER PUMPAGE

Data from the Pennsylvania Public Utility Commission Rates and Research Bureau gives information on the use of surface water in Montgomery County. Three municipalities supply their own water. The rest

Table 6. *Record of selected wells—Montgomery County, Pennsylvania*

Location number: First four numbers refer to degrees and minutes of latitude, second four numbers are degrees and minutes of longitude.
Method of construction: Drl, drilled.
Aquifer name: Trd, diabase; Trb, Brunswick Formation; Trl, Lockatong Formation; Trs, Stockton Formation; Ocs, Conestoga Limestone; Ce, Elbrook Formation; Cl, Ledger Dolomite; Ch, Harpers Formation; Cch, Chickies Quartzite; Xgn, Granite gneiss; Xs, Serpentine; Xw, Wissahickon Formation; Xhg, Hornblende gneiss.

Use: A, air-conditioning; D, domestic; I, industrial; Irr, irrigation; O, observation; PS, public supply; S, stock; T, test; U, unused; X, destroyed.
Remarks: CA, chemical analysis; NS, not shown on well-location map.

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
Mg 1	4013-7526	E. State Penitentiary	—	—	140	Dug	—	22	—	Trb	10-28-31	18	—	X	
2	4014-7539	Pottsgrove Manor	—	1752	158	Dug	48	30	—	Trb	10-28-47	28	—	O	
3	4014-7527	Gottfried Ott	—	—	170	Dug	48	29	—	Trb	10-27-47	19	—	U	
4	4011-7528	Collegeville - Trappe	Honenberger	1936	195	Drl	12-8	275	34	Trb	4-13-50	24	125	U	NS
5	4011-7528	do.	Kohl Bros.	1935	195	Drl	12-8	250	42	Trb	10-31-35	15	200-240	PS	NS
6	4011-7528	do.	do.	1942	180	Drl	8	250	40	Trb	5- 6-48	15	150	PS	
7	4011-7528	do.	do.	1947	190	Drl	8	367	6	Trb	9- 2-47	40	125	U	NS
8	4011-7528	do.	do.	1947	210	Drl	8-6	357	41	Trb	12-28-47	26	148	PS	CA
9	4007-7513	Ambler Boro	—	1924	125	Drl	10	65	—	Cl	—	Flow	450	PS	CA
10	4009-7512	do.	Bollinger	1931	280	Drl	10	210	30	Trs	—	37	165	PS	CA, NS
11	4009-7512	do.	Ridpath & Potter	1942	280	Drl	10	300	45	Trs	—	40	380	PS	CA
12	4007-7513	do.	do.	1947	160	Drl	12	300	51	Cl	—	26	850	PS	CA
13	4008-7518	E. Norristown	Parente	1923	245	Drl	8	138	24	Trs	—	Flow	40	PS	
14	4008-7518	do.	do.	1927	245	Drl	8	118	31	Trs	3-10-47	30	30	PS	
15	4008-7519	George Ruth	—	1926	200	Drl	6	73	—	Trs	10-14-52	20	—	U	
16	4007-7522	C. K. Gennaria	—	1910	240	Drl	6	130	—	Trs	10-14-52	21	—	U	
17	4008-7521	Norristown State Hospital	—	—	250	Drl	10	410	—	Trs	9- 8-48	170	100	U	
18	4008-7521	do.	—	—	248	Drl	10	372	—	Trs	10- 6-49	160	120	U	NS
19	4008-7521	do.	—	—	242	Drl	10	382	—	Trs	10- 7-48	156	100	PS	NS
20	4008-7521	do.	—	—	248	Drl	8	474	—	Trs	10- 5-48	160	120	PS	CA

Mg	21	4008-7521	Norristown State Hospital	—	—	250	Drl	8	486	—	Trs	10-15-48	147	170	U	
	22	4008-7521	do.	—	—	248	Drl	8	484	—	Trs	10- 6-48	150	136	PS	CA
	23	4008-7521	do.	—	—	245	Drl	10	401	—	Trs	—	140	170	X	NS
	24	4008-7521	do.	—	—	180	Drl	8	277	—	Trs	—	61	110	X	CA, NS
	25	4008-7520	do.	—	—	180	Drl	8	321	—	Trs	10-15-52	78	192	U	NS
	26	4008-7520	do.	—	—	179	Drl	12	454	20	Trs	9-23-48	83	100	PS	
	27	4008-7520	do.	—	1936	131	Drl	12	310	19	Trs	9-24-48	33	390	U	NS
	28	4008-7520	do.	Artesian Well Co.	1949	135	Drl	12	300	60	Trs	—	4	350	PS	CA
	29	4008-7520	do.	do.	1949	151	Drl	12	351	76	Trs	—	9	375	PS	NS
	30	4007-7521	Norristown Brick Co.	—	1910	200	Drl	6	55	—	Trs	10-15-52	44	—	U	NS
	31	4007-7521	do.	Parente Bros.	1925	200	Drl	6	70	—	Trs	—	40	10	I	
	32	4007-7521	Stroehman Bros.	—	1927	135	Drl	6	100	—	Trs	1940	30	40	U	NS
	33	4007-7521	Hannaway & Gordon	—	1925	138	Drl	6	235	—	Trs	10- 6-52	40	35	I	CA
	34	4007-7521	do.	—	1936	138	Drl	8	255	—	Trs	1949	40	60	I	NS
	35	4007-7520	Adam Scheidt Brewing Co.	—	1920	100	Drl	8	325	—	Trs	—	21	30	I	CA
	36	4007-7520	do.	F. L. Bollinger	1930	80	Drl	10	600	—	Trs	—	10	40	I	CA, NS
	37	4007-7520	do.	do.	1931	90	Drl	12	205	—	Trs	—	12	120	I	CA
	38	4007-7520	do.	do.	1937	80	Drl	8	151	—	Trs	10-21-52	23	20	U	NS
	39	4006-7520	Zarcone Market	Parente Bros.	1933	75	Drl	6	172	—	Trs	—	—	8	U	
	40	4005-7519	International Paper Co.	Ridpath & Potter	1949	55	Drl	6	250	24	Cl	2-12-49	10	22	U	NS
	41	4006-7519	Allen Iron & Steel Co.	—	—	55	Drl	6	210	—	Cl	—	—	—	I	
	42	4006-7519	W. A. Case & Son Mfg.	—	1900	55	Drl	36	16	—	Cl	10-16-52	Dry	—	U	NS
	43	4006-7519	do.	—	1935	55	Drl	6	80	—	Cl	4- 9-52	12	—	U	NS
	44	4006-7519	Pittsburgh Screw & Bolt	—	1915	100	Drl	6	75	—	Trs	10-21-52	40	165	O	
	45	4005-7519	National Cylinder Gas Co.	F. L. Bollinger	1937	—	Drl	8	280	—	Ocs	—	4	115	I	
	46	4012-7516	North Wales Water Co.	—	1888	440	Drl	6	500	—	Trl	—	—	—	U	NS
	47	4012-7516	do.	Samuel Marwin	1888	389	Drl	8	129	20	Trb	—	—	—	U	NS
	48	4012-7516	do.	Raun and Co.	1893	390	Drl	8	104	20	Trb	—	—	—	U	
	49	4012-7516	do.	Ridpath & Potter	1906	391	Drl	8	158	45	Trb, Trl	—	—	100	U	CA
	50	4012-7516	do.	do.	1922	355	Drl	10	448	350	Trb	—	—	—	U	NS
	51	4012-7516	do.	do.	1909	400	Drl	8	800	40	Trl	—	—	—	U	NS
	52	4012-7516	do.	do.	—	350	Drl	8	350	30	Trb, Trl	—	—	80	PS	CA
	53	4012-7516	do.	F. L. Bollinger	1928	388	Drl	8	350	—	Trb	—	—	30	U	NS
	54	4012-7516	do.	do.	1910	392	Drl	18	500	—	Trl	—	—	—	U	NS
	55	4012-7517	do.	—	1929	328	Drl	10	300	77	Trb	—	—	240	PS	NS
	56	4012-7517	do.	—	1945	320	Drl	14-10	384	72	Trb	4-23-45	0	240	PS	
	57	4013-7517	Martin Century Farms	Parente Bros.	1929	320	Drl	8	201	30	Trb	6-20-46	45	90	I	
	58	4013-7518	do.	do.	1930	322	Drl	8	225	30	Trb	6-21-46	86	95	I	NS

Table 6. *Record of selected wells—Montgomery County, Pennsylvania*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
59	4013-7518	do.	do.	1934	320	Drl	8	198	30	Trb	6-25-46	53	53	I	NS
60	4014-7516	Lansdale Boro	—	1883	366	Drl	8	312	80	Trb	—	92	35	PS	
61	4014-7516	do.	—	1892	366	Drl	8	392	—	Trb	8- 6-54	79	8	U	NS
62	4014-7516	do.	—	1903	366	Drl	8	388	22	Trb	8- 6-54	76	8	U	CA, NS
63	4014-7516	do.	—	1908	366	Drl	8	400	120	Trb	3- 1-43	78	18	U	CA, NS
64	4014-7516	do.	—	1910	366	Drl	8	1108	18	Trb	11- 4-54	83	8	U	CA
65	4014-7516	do.	—	1911	376	Drl	8	436	34	Trb	11-14-54	80	—	U	NS
66	4014-7516	do.	F. L. Bollinger	1922	376	Drl	8	378	—	Trb	3- 1-47	92	80	U	NS
67	4014-7517	do.	do.	1923	328	Drl	8	292	—	Trb	3- 1-47	132	57	PS	NS
68	4014-7517	do.	do.	1927	322	Drl	8	500	250	Trb	1-31-47	83	79	PS	
69	4014-7517	do.	William Stothoff	1935	328	Drl	12- 8	264	40	Trb	1-31-47	73	39	PS	NS
70	4014-7516	do.	do.	1937	421	Drl	10- 8	391	36	Trb	1-31-47	84	139	PS	
71	4014-7516	Lansdale Boro	William Stothoff	1939	407	Drl	12- 8	285	43	Trb	1-31-47	70	120	PS	
72	4014-7516	do.	do.	1941	353	Drl	16-10	306	44	Trb	3- 1-47	42	128	PS	NS
73	4013-7515	do.	do.	1944	371	Drl	14-10	325	45	Trb	3- 1-47	46	300	PS	
74	4014-7515	do.	do.	1948	403	Drl	12-10	546	—	Trb	2-24-48	48	50	U	NS
75	4014-7515	do.	do.	1948	384	Drl	12-10	399	40	Trb	9-17-48	57	175	PS	
76	4013-7516	do.	do.	1949	341	Drl	12-10	388	37	Trb	7-18-49	23	240	PS	CA
77	4013-7516	do.	do.	1951	354	Drl	12-10	404	—	Trb	7- 3-51	30	250	PS	NS
78	4014-7515	do.	do.	1951	375	Drl	16-12	430	41	Trb	10-31-52	126	150	PS	
79	4014-7517	Lansdale Electric	Alexander	—	350	Drl	8	279	—	Trb	1-14-54	109	20	I	NS
80	4014-7517	Lansdale Power Plant	Bollinger	1928	325	Drl	8	320	—	Trb	1946	60	80	I	
81	4014-7517	do.	do.	1936	340	Drl	8	350	—	Trb	1946	45	60	I	NS
82	4015-7517	Lansdale Sewage Plant	do.	1933	310	Drl	8	375	—	Trb	1947	20	18	I	NS
83	4015-7517	Lansdale Forest Products	do.	1934	330	Drl	8	425	—	Trb	11- 8-52	74	—	U	NS
84	4015-7517	do.	do.	1947	330	Drl	8- 6	231	—	Trb	—	63	11	I	
85	4014-7517	Lansdale Ice & Storage	—	—	360	Drl	8	615	—	Trb	11-18-52	66	—	U	NS
86	4014-7517	do.	—	1900	355	Drl	8	300	—	Trb	11-18-52	60	—	U	NS
87	4014-7517	do.	Shaw	1921	350	Drl	6	305	—	Trb	1946	60±	35	I	NS

88	4014-7517	do.	Bollinger	1936	355	Drl	10	450	—	Trb	1946	60±	40	I	
89	4013-7516	Lansdale Tube Co.	Philadelphia Drill Co.	1949	382	Drl	8	400	40	Trb	9-20-49	50	96	I	
90	4013-7517	do.	do.	1951	375	Drl	8	500	46	Trb	1-17-51	57	165	I	NS
91	4014-7538	Joseph Prince	—	1913	190	Drl	6	299	—	Trb	10-23-52	59	—	U	NS
92	4014-7538	Sehulz Baking Co.	—	1932	190	Drl	8	242	—	Trb	11- 1-44	70	150	I	
93	4015-7538	Raymond Nester	—	1916	165	Drl	6	150	—	Trb	—	—	76	I	
94	4014-7538	Clover Leaf Dairy	Penrose Keller	1926	175	Drl	6	125	—	Trb	—	—	—	I	NS
95	4015-7538	do.	do.	1928	170	Drl	6	125	—	Trb	—	—	—	I	NS
96	4014-7538	Clover Leaf Dairy	C. S. Garber	1935	160	Drl	8	276	—	Trb	1947	55	50	I	
97	4014-7538	Pottstown Cold Storage	Groff	1937	150	Drl	8	250	100	Trb	6-17-47	20	125	I	NS
98	4014-7538	do.	Kohl	1938	150	Drl	8	800	120	Trb	6-17-47	20	140	I	
99	4014-7538	Pottstown Plating Inc.	C. S. Garber	1943	135	Drl	8	230	40	Trb	1950	24	115	I	NS
100	4014-7538	do.	do.	1951	135	Drl	8	545	40	Trb	8-1951	45	210	I	
101	4014-7538	Doehler & Jarvie Corp.	Penrose Keller	—	150	Drl	8	90	—	Trb	6- 3-55	51	—	O	NS
102	4014-7538	do.	Joseph Smith	1936	155	Drl	8	300-320	—	Trb	6- 2-55	53	—	U	NS
103	4014-7538	do.	do.	1937	155	Drl	8	300-320	—	Trb	—	—	72	I	
104	4014-7538	do.	do.	1937	155	Drl	8	300-320	—	Trb	—	—	48	I	NS
105	4014-7538	do.	do.	1938	155	Drl	8	300-320	—	Trb	—	—	71	I	NS
106	4014-7538	do.	do.	1940	155	Drl	8	300-320	—	Trb	—	—	59	I	NS
107	4014-7538	Minn.-Honeywell Co.	C. S. Garber	1933	145	Drl	8	300	—	Trb	—	—	220	I	NS
108	4014-7538	Philadelphia Dry Cleaners	Joseph Smith	1930	150	Drl	6	199	60	Trb	1950	18	60	I	
109	4014-7539	Vaughn Knitting Co.	—	1910	—	Drl	48	20	20	Trb	—	10	10	I	NS
110	4014-7541	Pottstown Cement Bloek	C. S. Garber	1941	170	Drl	8	112	—	Trb	1941	15	15	I	NS
111	4014-7541	Pottstown Metal Produets	do.	1941	165	Drl	6	219	—	Trb	—	34	90	I	CA
112	4014-7541	do.	Charles Merritt	1951	165	Drl	6	120	—	Trb	—	34	9	I	NS
113	4015-7540	Joseph Fazekas	—	1920	245	Dug	36	25	—	Trb	10-23-52	7	—	U	
114	4013-7531	Leo Arena Market	—	1900	290	Dug	24	36	—	Trb	10-22-52	30	—	U	
115	4016-7536	Ringing Roek Park	—	1900	470	Drl	6	90	—	Trd	—	—	3	PS	
116	4016-7536	do.	Samuel Garber	1944	470	Drl	6	175	—	Trd	—	—	4	D	
117	4006-7519	Rambo & Reager Inc.	—	1900	—	Dug	96	51	—	Trs	7-20-53	13	—	U	
118	4008-7513	Cruse Kemper	—	—	—	Drl	4	75	—	Trb	8-28-55	13	—	U	NS
119	4009-7513	Keasby & Matteson	—	1910	190	Drl	8	234	234	Trs	—	17	100	I	CA
120	4010-7506	Hatboro Theater	Ridpath & Potter	1937	—	Drl	8	272	11	Trs	7-21-53	37	—	U	NS
121	4013-7517	E. C. Geiger	—	1909	—	Drl	6	100	—	Trb	11-30-53	72	40	I	NS
122	4013-7517	Sharpe & Dohme	—	1915	370	Drl	8	285	—	Trb	—	40	75	I	
123	4012-7518	Mark, Sharpe & Dohme	F. L. Bollinger	1942	362	Drl	10-6	502	—	Trb, Trl	5-14-51	34	15	U	NS
124	4012-7517	do.	C. W. Lauman	1949	329	Drl	12	300	—	Trb	—	—	350	I	NS
125	4012-7518	do.	do.	—	357	Drl	12	300	—	Trb	—	—	140	I	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
126	4012-7517	do.	do.	—	338	Drl	12	241	—	Trb	5-14-51	167	150	I	NS
127	4013-7518	do.	do.	—	351	Drl	12-10	300	—	Trb	11- 3-53	53	130	O	NS
128	4013-7518	do.	do.	—	352	Drl	12-10	300	—	Trb	11- 3-53	58	395	I	
129	4012-7518	dc.	do.	1949	359	Drl	12-10	269	—	Trb	11- 3-53	59	30	U	NS
130	4013-7517	do.	do.	1949	339	Drl	12-10	300	16	Trb	11- 3-53	66	320	I	
131	4001-7518	Shipley School	—	—	—	Dug	45	20	—	Xhg	6-19-53	23	—	D	
132	4000-7517	Autocar Co.	—	—	—	Drl	8	300	—	Xw	6-25-53	14	—	U	
133	4001-7518	Bryn Mawr Hotel	—	—	—	Drl	10	254	—	Wx	11- 6-33	18	—	I	
134	4015-7517	Werner Foundry & Mach.	Pat Flaherty	1920	323	Drl	6	85	—	Trb	—	—	—	A	NS
135	4013-7517	Lansdale Tube Co.	Phila. Drilling Co.	1953	370	Drl	12-8-6	500	—	Trb	8-17-53	85	150	I	
136	4014-7515	Institute of Blind	—	—	435	Dug	24	23	24	Trb	2-25-54	19	—	U	NS
137	4014-7516	Interstate Hosiery	—	—	365	Drl	—	—	—	Trb	—	—	—	U	NS
138	4014-7516	do.	—	—	370	Drl	10	—	—	Trb	—	—	50	I	NS
139	4014-7516	do.	—	—	370	Drl	—	—	—	Trb	—	—	70	I	
140	4013-7518	Martin Century	William Stothoff	1954	293	Drl	8	237	30	Trb	2-25-59	17	200	I	
141	4014-7516	Institute of Blind	—	—	435	Drl	6	—	—	Trb	—	—	—	X	NS
142	4014-7518	Lansdale Borough	William Stothoff	1953	310	Drl	12	500	41	Trb	—	19	50	PS	NS
143	4014-7518	do.	do.	1953	295	Drl	12	400	30	Trb	6- 9-59	8	250	PS	
144	4014-7517	Anadale Corp.	—	—	—	Drl	8	198	6	Trb	2-27-41	84	6.3	I	
145	4009-7513	Ambler Borough	Bollinger	1953	200	Drl	10	305	71	Trs	—	—	114	U	CA
146	4019-7519	Telford Borough	Ridpath and Potter	1928	420	Drl	10	205	35	Trb	9-16-56	90	190	PS	CA
147	4013-7516	Lansdale Tube Co.	Phila. Drilling Co.	1953	370	Drl	8	500	—	Trb	8-26-54	85	150	I	
148	4012-7528	Collegeville - Trappe	Kohl Bros.	1954	225	Drl	8	373	33	Trb	8- 4-54	8.3	150	PS	CA
149	4014-7517	Institute of Blind	—	1954	430	Drl	8	83	—	Trb	7- 2-54	17	—	U	NS
150	4014-7517	J. W. Rex Co.	Bollinger	1954	320	Drl	10	403	—	Trb	8- 5-54	70	58	I	NS
151	4013-7516	Lansdale Tube Co.	Phila. Drilling Co.	1954	365	Drl	8	500	78	Trb	11- 6-54	100	195	I	NS
152	4015-7516	American Encanstie Tile	—	1929	365	Drl	8	203	25	Trb	1954	98	60	I	NS
153	4015-7516	do.	—	1954	365	Drl	10	400	—	Trb	1954	101	80	I	
154	4014-7517	Areadia Hosiery	Seazetts	1934	353	Drl	6	193	30	Trb	1934	85	20	I	NS
155	4015-7516	Penndale Inc.	Ridpath & Potter	1954	367	Drl	8	600	30	Trb	—	85	30	I	NS

156	4015-7517	Perkins Glue Co.	—	1909	340	Drl	6	206	—	Trb	1909	30	40	I	NS
157	4015-7517	F. M. Weaver Co.	Bollinger	1950	315	Drl	8	285	47	Trb	1950	50	115	I	
158	4015-7517	do.	do.	1920	317	Drl	6	100	—	Trb	1950	Dry	—	U	NS
159	4015-7517	Nyce-Crete Co.	—	1940	325	Drl	6	—	—	Trb	—	—	—	U	NS
160	4015-7517	F. M. Weaver	—	—	325	Drl	—	—	—	Trb	—	—	—	U	NS
161	4014-7517	Dexdale Hosiery	Bollinger	—	340	Drl	6	201	30	Trb	2-22-54	125	21	I	NS
162	4014-7517	do.	do.	1935	340	Drl	10	761	30	Trb	—	—	45	I	NS
163	4014-7517	do.	do.	1947	340	Drl	8	301	30	Trb	—	—	15	I	NS
164	4014-7517	do.	do.	1947	342	Drl	8	405	30	Trb	—	—	18	I	NS
165	4014-7517	K & K Laundry Co.	Weley	1939	335	Drl	8	400	—	Trb	1946	90	75	I	
166	4014-7517	do.	—	—	335	Drl	6	147	—	Trb	—	—	5	U	NS
167	4012-7516	Leeds & Northrup Co.	Ridpath & Potter	1954	350	Drl	16-10	288	44	Trb	1960	48	200	I	CA
168	4013-7517	do.	—	—	358	Drl	8	126	—	Trb	1947	10	100	I	NS
169	4012-7517	do.	Ridpath & Potter	1954	336	Drl	4	175	—	Trb	—	—	—	U	CA, NS
170	4014-7517	Tritzel Bakery	—	1910	—	Drl	6	350	—	Trb	—	—	14	U	NS
171	4013-7517	Precision Tubes	Phila. Drilling Co.	1952	—	Drl	8	500	40	Trb	10-12-54	117	—	I	
172	4012-7517	King Foundries	Schroeder	1917	345	Drl	6	105	—	Trb	—	—	10	I	
173	4013-7516	Kleen Products	—	1920	—	Drl	6	90	20	Trb	10-12-54	Dry	—	U	NS
174	4013-7516	do.	L. G. Findly	1950	348	Drl	6	144	34	Trb	4- 8-50	25	36	X	NS
175	4013-7516	do.	—	—	358	Drl	6	160	—	Trb	10-12-54	Dry	—	U	NS
176	4013-7518	Sam Scott	Pat Flaherty	1941	352	Drl	8	94	12	Trb	1941	28	10	D	
177	4013-7518	Ellis L. Stump	do.	1941	350	Drl	8	96	—	Trb	1950	32	10	D	
178	4013-7516	N. Wales Foundry	—	1945	360	Drl	6	140	—	Trb	11- 8-50	92	10	I	NS
179	4012-7516	Leeds & Northrup	Ridpath & Potter	—	358	Drl	8	126	60	Trb, Trl	1947	10	100	U	NS
180	4013-7517	do.	do.	1954	325	Drl	6	250	—	Trb	11- 2-54	65	100	U	NS
181	4013-7517	Lansdale Brick Prod.	—	—	372	Drl	6	88	—	Trb	—	Dry	—	U	NS
182	4014-7515	Sanford Ulmer	H. L. Gorges	1954	430	Drl	6	125	24	Trb	11- 9-54	70	12	D	NS
183	4014-7515	do.	do.	1954	430	Drl	6	125	24	Trb	11- 9-54	72	10	D	NS
184	4014-7515	do.	do.	1953	440	Drl	6	180	24	Trb	11- 9-54	75	10	D	
185	4014-7516	Music Hall Theatre	—	1948	355	Drl	—	365	—	Trb	—	—	165	X	NS
186	4016-7515	Link-Belt	—	1952	270	Drl	—	300	—	Trb	—	—	85	I	CA
187	4016-7515	do.	A. J. Nicholas	1952	270	Drl	—	300	—	Trb	—	—	60	I	NS
188	4016-7515	do.	—	1952	270	Drl	—	300	—	Trb	—	—	105	I	
189	4016-7517	Hatfield Borough	—	1933	320	Drl	14	200	40	Trb	8-16-33	13	125	PS	CA
190	4016-7518	do.	J. T. Campbell	1928	350	Drl	8	202	36	Trb	—	—	150	PS	CA
191	4017-7517	do.	Wm. Stothoff	—	345	Drl	—	494	—	Trb	—	—	—	PS	
192	4015-7518	Hendricks Dairy	do.	1946	322	Drl	10	352	10	Trb	—	—	30	I	NS
193	4015-7518	do.	—	1927	325	Drl	6	102	—	Trb	1946	49	10	I	
194	4015-7517	Edward Hilpert	—	1936	325	Drl	6	100	—	Trb	11-10-54	10	15	D	NS
195	4015-7517	do.	—	1952	325	Drl	6	75	40	Trb	11-10-54	12	30	Irr.	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
196	4015-7517	Edward Hilpert	—	—	325	Drl	6	118	—	Trb	11-10-54	14	20	U	NS
197	4016-7519	Hatfield Packing Co.	—	—	295	Drl	6	181	—	Trb	1946	15	55	I	
198	4016-7519	do.	Parente Bros.	1947	300	Drl	—	200	—	Trb	—	—	60	I	
199	4015-7514	L. Weiss & Sons	—	1926	395	Drl	8	54	—	Trb	1926	15	35	I	
200	4016-7517	Hatfield Borough	—	—	320	Drl	6	115	25	Trb	—	15	35	I	
201	4009-7505	A. F. DeLang	Wiley & Buhler	1947	—	Drl	8	141	80	Trs	1947	40	2	D	
202	4013-7516	Lansdale Municipal	Wm. Stothoff	1955	350	Drl	12	647	—	Trb	1-19-55	54	282	PS	NS
203	4012-7517	N. Wales Water Authority	Kohl Bros.	1955	315	Drl	8	450	27	Trb	1-17-55	12	210	PS	
204	4013-7517	Precision Tube Co.	Phila. Drilling Co.	1955	365	Drl	8	500	—	Trb	5-19-55	52	190	I	NS
205	4010-7515	N. Wales Water Authority	Kohl Bros.	1956	245	Drl	12-10	318	—	Trs	—	Flow	300	PS	CA
206	4007-7527	Dettra Flag Co.	—	—	120	Drl	6	80	—	Trs	—	—	15	I	NS
207	4007-7527	do.	Kohl	1946	120	Drl	6	374	—	Trs	—	—	55	I	NS
208	4011-7508	U. S. Naval Air Station	—	—	330	Drl	6	82	—	Trs	—	11	—	U	NS
209	4012-7508	do.	—	1942	310	Drl	—	396	—	Trs	—	48	100	PS	CA, NS
210	4012-7508	do.	—	1942	310	Drl	—	—	—	Trs	—	—	180	PS	CA
211	4010-7506	Hatboro Authority	—	1900	250	Drl	—	—	—	Trs	—	—	120	PS	CA, NS
212	4010-7506	do.	—	—	250	Drl	—	—	—	Trs	—	—	200	PS	CA
213	4010-7506	do.	—	—	250	Drl	—	—	—	Trs	—	—	145	PS	CA, NS
214	4010-7505	do.	Wm. Stothoff	1944	315	Drl	—	400	—	Trs	—	—	—	U	CA, NS
215	4010-7505	do.	do.	1946	240	Drl	—	400	—	Trs	—	—	35	U	NS
216	4011-7506	do.	do.	1947	225	Drl	—	297	—	Trs	—	—	227	PS	CA
217	4010-7506	do.	Ridpath & Potter	1948	220	Drl	—	101	—	Trs	—	—	170	PS	CA
218	4011-7506	do.	William Stothoff	1952	225	Drl	—	306	—	Trs	—	—	160	PS	CA, NS
219	4011-7506	do.	do.	1953	217	Drl	14-10	—	40	Trs	—	—	—	PS	CA
220	4010-7506	do.	Rulan & Cook	1955	225	Drl	—	400	42	Trs	—	—	70	PS	CA
221	4011-7532	Kresley Bleach & Dye	Kohl Bros.	1941	130	Drl	8	449	22	Trb	—	—	80	U	NS
222	4011-7532	do.	do.	1941	130	Drl	8	251	28	Trb	—	23	135	I	
223	4013-7517	Leeds & Northrup	Ridpath & Potter	1955	332	Drl	10	350	—	Trb	1955	49	316	I	NS

224	4013-7517	Tyson Shirt Co.	—	—	70	Drl	6	250	—	Trs	—	—	—	X	NS
225	4008-7521	Norristown State Hospital	Nicholas	1950	165	Drl	12	300	—	Trs	8-15-56	45	75	U	
226	4007-7520	Tyson Shirt Co.	—	—	70	Drl	—	250	—	Trs	—	—	—	A	NS
227	4007-7521	Elmer Clemson & Son	Elmer Lauhman	1939	190	Drl	6	80	20	Trs	—	20	20	I	
228	4007-7521	Walt Warehouse	—	1940	65	Drl	8	—	—	Trs	—	—	150	U	NS
229	4007-7521	Perfection Bakery	Kocker Bros.	1939	96	Drl	6	90	—	Trs	—	—	—	U	
230	4009-7517	Blue Bell Water Works	Ridpath & Potter	1953	336	Drl	12-10-8	250	89	Trs	11- 8-55	18	400	PS	CA
231	4009-7516	Maurice J. Potter	do.	1953	340	Drl	16	—	—	Trs	—	—	—	D	NS
232	4009-7516	A. B. Jervis	F. L. Bollinger	1938	350	Drl	6	150	150	Trs	—	—	—	D	NS
233	4008-7516	Robert G. Frozer	—	—	350	Drl	6	100	—	Trs	—	—	10	D	
234	4009-7516	C. V. Blagden	—	1900	305	Dug	36	25	25	Trs	11- 8-55	6	—	D	NS
235	4009-7516	C. V. Blagden	F. L. Bollinger	1950	305	Drl	6	124	—	Trs	—	60	—	D	
236	4008-7516	Thomas Fleming	do.	1953	340	Drl	—	110	—	Trs	—	—	—	D	
237	4008-7516	C. W. Barclay	—	—	340	Drl	6	100	—	Trs	—	—	—	D	NS
238	4010-7517	F. W. Young	—	1930	275	Drl	6	78	—	Trs	—	—	—	D	NS
239	4010-7517	B. L. Herbert	—	1930	275	Drl	—	90	—	Trs	—	15	—	D	
240	4010-7517	F. T. Hoffman	—	1945	285	Drl	6	74	—	Trs	—	—	—	D	NS
241	4010-7516	Gwynllan Valley	—	—	315	Drl	6	175	—	Trs	—	—	20	D, S	NS
242	4010-7516	do.	Parente	1950	315	Drl	6	182	—	Trs	—	—	9	D, S	NS
243	4010-7516	do.	—	1925	345	Drl	6	175	—	Trs	—	45	10	D	
244	4010-7516	do.	—	—	340	Drl	—	—	—	Trs	—	—	10	D, S	NS
245	4010-7516	do.	—	—	280	Drl	—	50	—	Trs	—	—	50	D, S	
246	4010-7516	Gwynllan Valley	—	—	325	Drl	6	180	—	Trs	—	—	—	D, S	NS
247	4010-7516	do.	—	—	325	Drl	6	200+	—	Trs	—	—	50	D, S	NS
248	4010-7516	do.	—	—	310	Drl	6	100+	—	Trs	1955	22	10	D	NS
249	4010-7516	do.	—	—	295	Drl	6	150	—	Trs	1955	81	10	D	
250	4010-7516	do.	—	—	335	Drl	6	180	—	Trs	—	—	10	D	NS
251	4011-7516	James C. Arthur	—	1949	315	Drl	6	—	—	Trs	—	—	10	D, S	
252	4011-7515	George D. Borda	Bollinger	1950	—	Drl	6	—	—	Trs	—	—	5	D	NS
253	4010-7516	Walter W. Pollock	—	—	—	Drl	6	200	—	Trs	—	—	10	D	
254	4011-7515	Thomas J. Hurley	—	1925	—	Drl	—	—	—	Trs	—	—	—	U	NS
255	4011-7515	do.	—	1953	255	Drl	6	93	—	Trs	—	—	10	D	
256	4011-7516	J. B. Haines	—	—	290	Dug	36	30	—	Trs	—	—	10	D	
257	4011-7517	C. W. MacMullen	George Lauman	1950	340	Drl	6	65	—	Trl	11- 9-55	22	10	D	
258	4011-7517	John F. Gerber	—	1948	385	Drl	6	80	—	Trl	—	—	10	D	NS
259	4008-7518	H. W. Care	Mathias	1900	210	Drl	6	100	—	Trs	—	25	10	D, S	
260	4008-7519	J. M. Coulston	C. W. Lauman	1951	235	Drl	6	100	—	Trs	—	—	20	I	
261	4009-7518	B & G Clark	—	1910	285	Drl	6	180	—	Trs	—	30	—	D	
262	4009-7518	Sunny Acres Dairy	Lauman	1947	—	Drl	6	138	—	Trs	1954	20	120	I	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
263	4009-7518	Charley Motor Court	O'Donnell	1948	—	Drl	8	115	—	Trs	11-10-55	43	—	U	
264	4009-7517	do.	—	1950	290	Drl	6	120	60	Trs	—	20	40	D, S	NS
265	4009-7517	do.	—	1950	290	Dug	24	28	—	Trs	—	—	—	U	NS
266	4009-7517	H. J. Copeland	C. Miller	1955	305	Drl	6	—	—	Trs	—	120	—	I	
267	4008-7517	James Almony	Bollinger	1951	275	Drl	6	80	—	Trs	1951	15	40	D	
268	4008-7517	Wm. E. Buehler	—	1925	250	Drl	6	—	—	Trs	—	—	5	D	
269	4008-7515	Wings, Inc.	—	1937	305	Drl	6	195	—	Trs	—	—	100	PS	
270	4009-7516	Blue Bell Waterworks	Ridpath & Potter	1956	348	Drl	12	332	115	Trs	—	—	150	PS	CA
271	4008-7519	Gey Band & Tag Co.	Parente	1955	165	Drl	8	176	14	Trs	—	22	50	PS	
272	4009-7517	C. H. Zimmerman	Bollinger	1939	300	Drl	—	110	—	Trs	—	—	3	D	
273	4009-7517	R. B. Oeste	do.	—	297	Drl	—	85	—	Trs	—	—	5	D	NS
274	4014-7539	Pottstown Metal Weld	M. Kuszyk	1956	135	Drl	8	150	—	Trb	—	—	—	I	
275	4011-7507	Horsham Township	—	—	345	Drl	10	354	40	Trs	—	27	100	PS	CA
276	4011-7507	do.	—	—	300	Drl	—	—	—	Trs	—	—	257	PS	CA, NS
277	4008-7522	Nelson Dairy	Kohl Bros.	—	—	Drl	8	210	20	Trs	—	56	50	I	NS
278	4008-7522	do.	do.	—	—	Drl	8	210	20	Trs	—	56	75	I	CA
279	4008-7522	do.	Parente	—	—	Drl	8	225	20	Trs	—	45	125	I	NS
280	4009-7518	E. E. Callinar	—	—	300	Drl	—	96	—	Trs	—	—	21	Irr.	NS
281	4011-7526	Superior Tube Co.	Kohl Bros.	—	190	Drl	6	460	105	Trb	—	—	60	I	CA, NS
282	4011-7526	do.	do.	1941	190	Drl	8	300	61	Trb	1941	57	110	I	CA, NS
283	4011-7526	do.	do.	1951	185	Drl	8	199	101	Trb	10-23-56	87	87	I	CA
284	4011-7526	do.	do.	1953	185	Drl	8	449	22	Trb	1953	86	55	I	NS
285	4008-7512	Fort Washington Ind. Park	Penn Drilling Co.	1956	182	Drl	10	273	32	Trs	10-18-56	7	25	I	CA
286	4008-7511	do.	do.	1956	175	Drl	6	—	—	Trs	—	—	100	I	
287	4009-7511	do.	do.	1956	215	Drl	10	205	—	Trs	—	—	—	I	CA, NS
288	4006-7511	Phila. Suburban Co.	Thomas Keyes	1955	190	Drl	12	456	54	Cc	11- 8-55	36	13	U	
289	4007-7527	Alan Wood Steel Co.	Bollinger & Sons	1956	100	Drl	8	380	40	Trs	11-20-56	29	60	I	
290	4008-7514	Ambler Borough	Ridpath & Potter	1956	290	Drl	10	500	330+	Trs	—	—	62	PS	CA

291	4010-7510	Thomas Bannon	Buehler & Sons	1956	345	Drl	8	70	35	Trs	1956	20	15	D	NS
292	4018-7521	H. W. Longarce	A. W. Dorn	1956	390	Drl	6	131	38	Trb	11- 8-56	50	45	I	
293	4014-7534	Saratoga Trailer Park	—	1946	260	Drl	6	226	—	Trb	1956	87	20	PS	
294	4010-7514	Kuhn Greenhouses	—	—	230	Dug	108	18	18	Trs	—	—	5	I	
295	4010-7505	Sylvania Electric Co.	Ridpath & Potter	1951	280	Drl	10	700	—	Trs	—	—	15-30	I	
296	4010-7505	Sylvania Electric Co.	Ridpath & Potter	1951	280	Drl	10	700	—	Trs	12- 5-56	29	—	U	NS
297	4010-7505	Reiniger Florist	—	—	270	Dug	72	6	—	Trs	—	Flows	15	Irr.	NS
298	4010-7505	do.	—	1900	270	—	6	118	—	Trs	—	20	75	Irr.	
299	4010-7506	Sunlhemer's Bakery	Wiley & Buehler	1930	225	Drl	6	100	—	Trs	—	—	50	I	NS
300	4011-7515	North Wales Authority	Ridpath & Potter	1958	260	Drl	8	570	20	Trs	—	—	80	O	
301	4007-7527	Synthene Corp.	Artesian Well Drill	1929	—	Drl	6	375	—	Trs	—	50	160	I	NS
302	4007-7527	do.	Bollinger	1936	—	Drl	8	375	—	Trs	—	50	190	I	CA, NS
303	4007-7527	do.	Kohl Bros.	1954	100	Drl	10	425	—	Trs	—	—	500	I	CA
304	4007-7527	B. F. Goodrich Co.	—	1929	—	Drl	8- 6	330	25	Trs	—	—	100	I	CA, NS
305	4007-7527	Peerless Paper Mills	—	1930	115	Drl	6	151	40	Trs	5- 3-55	35	22	I	NS
306	4007-7527	do.	Kohl Bros.	1942	110	Drl	10	610	—	Trs	—	—	85	U	NS
307	4007-7527	do.	do.	1942	110	Drl	8	225	27	Trs	—	—	48	U	NS
308	4007-7527	Hoslett Chute & Conveyor	—	1926	100	Drl	6	125	—	Trs	—	—	40	I	NS
309	4009-7513	Keasby Mattison	—	—	—	Drl	—	—	—	Trs	—	—	—	U	NS
310	4009-7513	do.	—	—	—	Drl	—	—	—	Trs	—	—	—	U	NS
311	4008-7514	C. M. Kline	Alexander	1941	—	Drl	12- 8	375	100	Trs	—	Flow	—	S	
312	4008-7514	do.	do.	1943	—	Drl	—	275	—	Trs	—	Flow	—	S	NS
313	4008-7514	do.	do.	1943	—	Drl	—	275	—	Trs	—	Flow	—	S	NS
314	4008-7514	do.	do.	1953	—	Drl	12	375	—	Trs	—	—	—	S	NS
315	4008-7514	do.	do.	—	—	Drl	—	—	—	Trs	—	—	—	—	NS
316	4007-7527	Piersol & Pine Mfg.	—	1956	100	Drl	6	125	—	Trs	—	—	—	I	
317	4009-7520	Posen Kline Tube Co.	—	—	350	Drl	6	180	—	Trs	—	—	15	I	
318	4009-7520	do.	—	—	—	Dug	48	30	—	Trs	—	—	—	U	NS
319	4009-7520	do.	—	—	—	Dug	—	—	—	Trs	—	—	—	U	NS
320	4008-7514	Dr. Steinbach	—	—	270	Drl	—	—	—	Trs	—	—	—	D, S	NS
321	4008-7514	M. F. Newcomb	—	1918	260	Dug	36	21	—	Trs	—	—	—	D	
322	4008-7513	Roosevelt Farm	—	1919	250	Dug	—	10	—	Trs	7-18-56	8	—	D, S	
323	4008-7513	do.	—	1919	240	Dug	—	14	—	Trs	7-18-56	5	—	D, S	NS
324	4008-7513	A. P. Keegan	Bollinger	1956	215	Drl	—	125-150	—	Trs	—	—	12	D	NS
325	4008-7513	Wm. Spoyd	Ridpath & Potter	1920	200	Drl	—	—	—	Trs	7-18-56	35	—	D	NS
326	4008-7513	Wm. Spoyd	—	—	190	Drl	—	—	—	Trs	—	—	—	O	NS
327	4007-7513	Harrington	O'Donnell	1929	180	Drl	8	660	—	Trs	7-18-56	23	6	D	
328	4008-7513	do.	do.	1929	180	Drl	8	480	—	Trs	7-18-56	30	2	D	
329	4007-7513	F. Altmus	Bollinger	1956	200	Drl	6	135	—	Trs	—	—	—	D	NS

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
330	4007-7513	Eaton	do.	1952	190	Drl	—	120	—	Trs	—	—	6	D	NS
331	4007-7513	C. M. Codwaldwer	—	1917	200	Drl	—	125-150	—	Trs	—	—	—	U	NS
332	4010-7510	Dr. Woods	—	—	380	Drl	—	120	—	Trs	7-19-56	39	—	D	
333	4010-7510	do.	—	—	390	Dug	36	—	—	Trs	7-19-56	28	—	U	NS
334	4009-7509	J. Heard	Lyman	1945	350	Drl	6	116	—	Trs	—	—	—	D	
335	4009-7509	do.	—	1932	350	Drl	6	116	—	Trs	—	—	—	D	NS
336	4009-7510	Broadburd	—	1930	370	Drl	—	60	—	Trs	—	—	—	D, S	NS
337	4009-7510	Wm. Engle	—	1942	350	Drl	6	150	—	Trs	—	—	10	D	NS
338	4009-7510	J. Dardzinski	—	1928	360	Drl	6	130	99	Trs	—	—	15	D, S	NS
339	4009-7510	do.	—	—	330	Drl	6	108	—	Trs	—	—	10	D	NS
340	4009-7510	R. L. Alexander	—	1926	340	Drl	—	85-90	—	Trs	7-19-56	22	—	D	
341	4009-7510	R. C. Poden	O'Donnell	1929	330	Drl	8	118	15	Trs	7-19-56	11	6	D	NS
342	4009-7510	Fred Reis	do.	—	330	Drl	6	97	—	Trs	7-19-56	18	—	D	NS
343	4010-7509	College Settlement	—	1941	330	Drl	6	90	—	Trs	—	—	—	D	NS
344	4010-7509	do.	—	—	330	Drl	6	—	—	Trs	7-20-56	14	—	D	
345	4010-7509	Kuhn Day Camp	Muslemen	—	—	Drl	—	105	—	Trs	7-20-56	17	—	D	NS
346	4010-7509	do.	do.	—	300	Drl	—	65	—	Trs	—	—	—	D	NS
347	4010-7509	do.	do.	—	310	Drl	—	80	—	Trs	—	—	5	D	
348	4010-7508	Mizner	—	—	340	Dug	72	16	—	Trs	—	—	—	D	NS
349	4010-7508	do.	—	—	315	Dug	72	16	—	Trs	7-20-56	14	—	D	
350	4010-7508	J. W. Cox	—	—	320	Drl	—	—	—	Trs	7-20-56	16	—	D	NS
351	4010-7508	Thomas	—	—	320	Drl	—	—	—	Trs	7-20-56	10	—	U	NS
352	4010-7508	do.	—	—	320	Drl	—	—	—	Trs	—	—	—	D	NS
353	4010-7508	E. A. Johnston	—	—	320	Drl	6	50	—	Trs	1954	7	—	D	
354	4009-7514	J. A. Sheets	—	—	290	Drl	6	150	—	Trs	—	—	—	D	
355	4009-7514	Boyers	Bollinger	1954	—	Drl	6	95	—	Trs	—	—	—	D	NS
356	4011-7512	Wm. Coonrod	Parente Bros.	1954	290	Drl	—	90	23	Trs	—	—	—	D	
357	4011-7512	H. Slutsky	—	—	320	Drl	—	75	—	Trs	—	—	—	D	
358	4011-7513	American Chemical Co.	—	—	340	Dug	—	17	—	Trs	1953	15	—	U	NS
359	4011-7513	do.	Ridpath & Potter	1953	340	Drl	—	160	—	Trs	7-29-56	70	25	D, Irr.	CA

360	4011-7513	do.	—	—	360	Drl	—	70	—	Trs	—	Dry	—	U	NS
361	4011-7512	H. B. Brown	Ridpath & Potter	1936	310	Drl	6	278	—	Trs	—	—	—	D, S	
362	4011-7512	do.	do.	1936	320	Drl	6	278	—	Trs	—	—	—	D, S	
363	4011-7512	do.	—	1954	310	Drl	—	—	—	Trs	7-24-54	15	—	D	CA
364	4009-7514	—	Bollinger	1947	—	Drl	—	175	—	—	—	—	—	D	
365	4011-7511	C. Huston	P. H. Flaherty	1947	340	Drl	27	105	—	Trs	—	—	—	D	
366	4011-7511	—	C. S. Garber	1956	310	Drl	6	86	39	Trs	—	—	—	D	NS
367	4011-7511	Van Stemlick	—	1936	280	Drl	6	—	—	Trs	7-15-56	9	—	D	CA
368	4011-7512	Oak Terrace Country Club	—	—	300	Drl	—	—	—	Trs	7-25-56	56	—	PS	
369	4011-7512	do.	—	—	340	Drl	4	—	—	Trs	7-25-56	50	—	D	NS
370	4011-7511	L. Young	O'Donnell	—	270	Drl	6	90	—	Trs	7-25-56	14	15	D	
371	4011-7511	H. K. Rossler	—	1930	260	Drl	6	103	—	Trs	—	—	—	D	NS
372	4011-7510	P. H. Burgdort	—	1900	310	Drl	6	100	—	Trs	—	—	—	D	NS
373	4012-7510	W. J. Diener	O'Donnell	1956	260	Drl	—	151	—	Trs	1956	30	—	D	
374	4012-7509	Joseph Wood Jr.	—	—	310	Drl	—	—	—	Trs	7-25-56	31	—	D	NS
375	4012-7509	F. C. Segessenman	—	1900	310	Drl	—	60	—	Trs	1956	30	—	D, S	
376	4011-7510	G. Fox	—	1951	340	Drl	8	85	—	Trs	—	—	—	D	
377	4011-7510	W. L. MacMurtie	—	1931	325	Drl	—	—	—	Trs	—	—	—	D, S	NS
378	4011-7510	E. A. Stanford	—	1700	330	Dug	30	23	—	Trs	2-24-56	14	—	D, S	
379	4011-7510	G. H. Clement	—	1940	320	Drl	6	120	—	Trs	—	—	—	D	NS
380	4011-7510	John Jordan	Mussleman	1954	300	Drl	8	90	20	Trs	—	Flow	15	D	
381	4007-7520	American News Co.	—	—	—	Drl	—	1500	—	Trs	—	—	—	U	
382	4009-7514	Bruntrager	—	1950	—	Drl	—	—	—	Trs	—	—	—	D	NS
383	4011-7508	J. Pryce	—	1951	340	Drl	6	80	—	Trs	7-25-56	21	—	A	NS
384	4011-7508	do.	—	1951	340	Drl	—	—	—	Trs	—	—	—	D	
385	4011-7509	Stanley Lauer	—	1949	340	Drl	6	65	40	Trs	7-25-56	12	—	D	
386	4009-7511	Penna. Sch. of Horticulture	—	—	350	Drl	6	110	—	Trs	—	—	—	D	
387	4010-7511	Schofforth Bros.	—	1931	325	Drl	6	87	40	Trs	7-27-56	14	70	D, Irr.	
388	4010-7512	J. J. McIlhinney	Carlson Bros.	1956	355	Drl	8	92	60	Trs	7-27-56	Flow	18	D	NS
389	4010-7510	E. Jones	—	—	370	Dug	36	20	—	Trs	7-27-56	15	—	D	NS
390	4010-7510	do.	O'Donnell	1941	380	Drl	—	125	—	Trs	—	—	—	D	NS
391	4007-7511	O. Kalpenbacker	—	1944	250	Drl	—	125	—	Cch	—	—	—	D	CA
392	4007-7510	D. D. Evero	—	1955	330	Drl	—	190	—	Cch	—	100	—	D	CA, NS
393	4007-7510	J. N. Godman	Phila. Artesian Water Co.	1941	320	Drl	6	213	22	Cch	1954	84	—	D	NS
394	4008-7511	J. Bode	O'Donnell	1955	190	Drl	6	271	69	Trs	—	—	10	D	CA
395	4008-7510	Cobre Adam	—	1945	250	Drl	6	87	—	Trs	—	—	—	D	
396	4008-7508	H. M. Crokett	O'Donnell	1951	290	Drl	6	105	—	Xgn	—	—	—	D	
397	4007-7511	Joseph Myer	H. L. Gorges	1955	290	Drl	6	165	18	Cch	—	65	20	D	
398	4007-7510	Donald Tunnell	Ridpath & Potter	1954	340	Drl	6	245	40	Cch	—	—	12	D	NS

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
399	4007-7510	Mfg. Club	Ridpath & Potter	1954	350	Drl	8	400	—	Cch	3-31-54	72	73	D	CA
400	4007-7510	Mfg. Country Club	—	—	350	Drl	8	525	—	Cch	11-10-53	60	8.5	U	NS
401	4007-7510	do.	—	—	340	Drl	8	600	—	Cch	—	—	8.5	U	NS
402	4009-7511	E. Egner	Dorn	1952	170	Drl	6	80	—	Trs	—	—	—	D	
403	4008-7511	Pinetown Golf Club	O'Donnell	1949	280	Drl	6	200	—	Trs	—	—	—	D	
404	4008-7511	do.	do.	—	270	Drl	—	—	—	Trs	—	—	—	U	NS
405	4009-7511	B. L. Bryner	—	—	255	Drl	—	110	—	Trs	—	—	—	D, S	NS
406	4009-7510	F. M. King	O'Donnell	1955	255	Drl	6	202	60	Trs	8- 1-56	8	17	D	CA
407	4009-7511	Wents Turkey Farm	B. Christ	1950	260	Drl	6	215	—	Trs	8- 1-56	15	6	S	
408	4009-7511	do.	—	—	260	Drl	—	55	—	Trs	—	—	—	S	NS
409	4009-7510	Thomas Barlow	O'Donnell	—	220	Drl	—	130	—	Trs	—	—	—	D	NS
410	4010-7508	Willow Ridge Farm	—	—	270	Drl	9	600	—	Trs	8- 1-56	17	—	I	
411	4009-7510	Jarrettown Elem. School	O'Donnell	1953	295	Drl	6	250	—	Trs	—	—	40	PS	NS
412	4008-7509	E. Wolf	—	—	250	Drl	—	—	—	Trs	—	—	—	D	NS
413	4009-7509	Tyoon Bros.	—	1860	295	Dug	72	22	—	Trs	—	—	—	D, S	
414	4008-7509	F. Y. Ueltzen	C. Laman	—	260	Drl	—	90	—	Trs	—	—	12	D	CA
415	4009-7509	H. Zieger & Son	—	—	320	Drl	8	254	—	Trs	8- 2-56	34	120	Irr.	
416	4009-7509	do.	—	—	320	Drl	6	250	—	Trs	—	—	500	Irr.	NS
417	4008-7509	A. Shuttle Co.	H. M. Walsh	—	230	Drl	6	90	43	Trs	—	75	—	D, I	
418	4008-7509	N. Schmidt	—	—	240	Drl	—	150	—	Trs	—	—	—	U	
419	4008-7510	Allied Concrete Supply	Lauman	—	230	Drl	—	90	—	Trs	—	—	30	I	CA
420	4008-7509	Robert Walker	Carl Richter	1943	230	Drl	6	186	186	Trs	—	—	16	I	NS
421	4001-7519	K. K. Stuart	—	—	400	Drl	—	35	—	Trl	—	—	70	—	—
422	4008-7512	J. A. Van Son	Bundar & Christ	—	260	Drl	6	125	20	Trs	8- 2-56	8	20	D, S	
423	4009-7511	W. Burlein	—	—	320	Drl	6	200	—	Trs	8- 2-56	26	—	D	
424	4009-7511	E. W. Edwards	—	—	350	Drl	6	220	40	Trs	—	—	—	D	
425	4010-7509	J. S. Armentrout	O'Donnell	1944	355	Drl	6	150	—	Trs	—	—	—	D	
426	4011-7521	Tom Benner	Parente	1949	—	Drl	—	70	—	Trl	—	—	—	D	

427	4013-7511	Whitemarsh Cemetary	—	1931	360	Drl	10	100	—	Trs	8- 6-56	25	—	D, Irr.	
428	4013-7511	do.	—	1941	352	Drl	10	90	—	Trs, Trl	—	—	—	Irr.	NS
429	4012-7511	do.	—	—	351	Drl	8	100	—	Trs	—	—	—	Irr.	NS
430	4012-7511	do.	—	—	361	Drl	8	90	—	Trs	—	—	—	D	
431	4012-7511	do.	—	—	354	Drl	—	—	—	Trs	8- 6-56	16	—	D	NS
432	4008-7516	C. S. Wurts	Bollinger	1925	345	Drl	—	90	—	Trs	—	—	—	D	
433	4008-7516	do.	do.	—	355	Drl	—	180	—	Trs	—	—	—	D	NS
434	4008-7516	E. C. Quin	do.	—	310	Drl	6	300	—	Trs	—	—	—	D	NS
435	4008-7515	C. S. Chestan	—	—	271	Drl	—	—	—	Trs	—	—	—	D	
436	4013-7510	F. I. Donchue	—	1953	330	Drl	—	110	—	Trs	—	—	—	D	NS
437	4013-7510	M. Connely	Wiley	1947	321	Drl	6	130	16	Trs	1947	32	5	D	NS
438	4013-7510	S. Gibson	Baker & Haltman	—	319	Drl	—	150	—	Trs	1955	47	20	D	NS
439	4013-7510	F. Zaiss	do.	—	312	Drl	—	135	—	Trs	1956	65	12	D	
440	4013-7509	H. P. Boyle	Caroon	1952	270	Drl	7½	86	—	Trs	—	—	—	D	
441	4013-7509	C. Detweller	H. Gorges	—	240	Drl	—	65	—	Trs	—	—	—	D, S	
442	4012-7509	O. Maurer	Mussleman	—	240	Drl	—	65	—	Trs	—	—	—	D	
443	4012-7509	S. Cops	Kessleman	—	270	Drl	—	125	30	Trs	—	—	—	D	
444	4012-7508	Wm. Zimmerman	—	—	300	Drl	—	98	—	Trs	—	—	—	D, S	NS
445	4013-7509	Fred Burns	Buehler	1954	300	Drl	6	168	30	Trs	—	—	—	D, S	
446	4013-7511	Novatang	O'Donnell	1940	295	Drl	6	404	—	Trl	—	—	—	D	
447	4013-7510	Camp Shepard	—	1949	325	Drl	—	192	20	Trl	—	—	—	PS	
448	4011-7508	John Lasch	—	1953	—	Drl	—	93	—	Trs	—	22	—	D	NS
449	4011-7508	John Lasch	Wyle & Sons	1948	—	Drl	—	130	—	Trs	—	Flow	5	D	
450	4011-7521	Variety Club Camp	—	—	410	Drl	—	175	—	Trb, Trl	—	—	—	D	NS
451	4011-7513	C. Morris	Ridpath & Potter	—	290	Drl	—	150	—	Trs	—	—	—	D	NS
452	4011-7513	Texaco Ser. Station	—	—	—	Drl	—	90	—	Trs	—	—	—	I	NS
453	4011-7513	Gulf Service Station	Rulon and Cook	—	270	Drl	4	181	85	Trs	—	—	16	I	CA, NS
454	4011-7513	Springhouse Elem. School	—	—	316	Drl	6	85	72	Trs	8-15-56	24	—	PS	CA
455	4011-7512	C. W. Collom	Parente Bros.	1943	—	Drl	6	185	125	Trs	8-16-56	25	—	D, S	
456	4010-7513	Pike Restaurant	Bollinger	—	325	Drl	—	235	—	Trs	—	—	35	I	
457	4010-7513	John Pappas	Bollinger	—	325	Drl	—	185	—	Trs	—	—	35	D	
458	4011-7514	W. G. Mitchel	—	—	320	Drl	—	117	—	Trs	—	—	45	D	
459	4011-7514	J. H. W. Ingersol	—	1900	335	Drl	—	180	—	Trs	8-15-56	75	8	D, S	
460	4010-7513	H. B. Coxe	—	1928	290	Drl	—	160	—	Trs	—	—	35	D	
461	4010-7514	G. Lippincott	Bollinger	1936	267	Drl	—	300	—	Trs	—	—	—	D	
462	4010-7514	Plumb	—	—	270	Drl	—	90	—	Trs	—	—	—	D	
463	4010-7514	W. P. Ware	—	1953	268	Drl	6	—	—	Trs	—	—	—	D	NS
464	4009-7514	Am. Paint & Chem. Co.	Ridpath & Potter	1942	—	Drl	—	405	—	Trs	8-27-56	64	408	I	CA
465	4009-7512	Arvid E. Lyden	do.	1957	300	Drl	6	130	—	Trs	—	—	—	D	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
466	4008-7515	Summer Labs Inc.	—	—	170	Drl	—	160	—	Trs	—	—	—	I	
467	4011-7521	Variety Club Camp	Parente Bros.	1949	420	Drl	6	225	—	Trb, Trl	—	—	—	PS	
468	4010-7519	A. E. Trueblood	Bollinger & Sons	—	360	Drl	6	255	20	Trl	9- 5-56	26	1	D	
469	4010-7519	W. B. McKinney	do.	—	260	Drl	—	300	—	Trs	—	—	35	D	NS
470	4010-7518	Robert Notsoy	Lauman	1952	275	Drl	6	84	25	Trs	—	—	43	D	
471	4010-7518	Matsey	—	—	—	Drl	—	105	—	Trs	—	—	—	D	
472	4010-7520	R. W. Bookheimer	Lauman	1945	450	Drl	—	110	—	Trb, Trl	—	—	—	D	
473	4010-7519	B. Bev.	do.	1950	350	Drl	—	120	—	Trl	—	—	—	D	
474	4009-7507	B. S. Fox	Bollinger	1953	—	Drl	—	108	—	Trs	—	—	—	D	
476	4010-7518	Granese	—	—	270	Drl	—	100	—	Trl	9- 6-56	30	—	D	
477	4010-7518	C. J. Jensen	Bollinger	1944	295	Drl	—	90	—	Trl	—	—	20	D, S	NS
478	4011-7518	F. McClure	Lauman	1944	325	Drl	—	150	—	Trl	9- 6-56	10	7.5	D, S	
479	4011-7517	E. W. Carlson	—	—	330	Drl	—	160	—	Trl	—	—	—	D	
480	4011-7518	W. A. Garver	—	1950	375	Drl	—	90	30	Trb, Trl	—	—	—	D	
481	4012-7519	A. J. Wilson	Flaghter	1950	417	Drl	6	112	—	Trl	9- 6-56	64	27	D	
482	4012-7518	Henry Krug	—	1949	370	Drl	—	120	25	Trl	—	—	—	D	NS
483	4011-7518	Joseph Bainiff	—	1953	360	Drl	6	132	—	Trl	9-25-56	61	12	D	
484	4009-7518	St. Helena School	—	—	—	Drl	6	114	—	Trs	9-25-56	21	—	U	NS
485	4009-7518	S. H. Kline	—	1880	230	Drl	—	85	—	Trs	—	—	—	D	NS
486	4009-7518	J. T. Graeff	Miller	1950	230	Drl	—	90	—	Trs	—	—	—	D	
487	4010-7505	S & P National Corp	—	1926	280	Drl	8	150	—	Trs	—	—	—	I	
488	4010-7505	do.	Heinickey	—	280	Drl	8	200	—	Trs	—	—	60	I	
489	4012-7508	U.S.N. Air Station	Phil. Drlg. Co.	1957	275	Drl	—	—	—	Trs	—	—	—	U	NS
490	4012-7508	do.	do.	1957	280	Drl	10	330	—	Trs	—	—	360	PS	CA
491	4006-7524	Refractory & Inst. Co.	Stothoff	—	90	Drl	8	185	—	Trs	1957	100	50	I	
492	4006-7524	do.	—	—	90	Drl	8	185	—	Trs	1957	100	50	I	NS

493	4010-7520	U.S. Army	C. S. Garber	1955	445	Drl	—	230	—	Trl	—	47	7	PS	CA
494	4010-7521	do.	do.	1955	460	Drl	—	230	40	Trl	—	51	23	PS	CA, NS
495	4011-7513	Amer. Chem. & Paint Co.	Ridpath & Potter	1957	305	Drl	8	266	40	Trs	—	25	330	Irr.	
496	4011-7513	Ely	Bollinger	1926	320	Drl	8	1014	523	Trl, Trs	—	—	30	U	NS
497	4007-7527	Alan Wood Steel Co.	do.	1956	80	Drl	8	—	—	Trs	—	—	—	I	NS
498	4015-7518	Lansdale Municipal Auth.	Wm. Stothoff	1957	340	Drl	12	560	90	Trb	9-18-57	77	90	PS	
499	4009-7512	Ambler Boro.	Ridpath & Potter	1957	285	Drl	6	300	—	Trs	1957	98	177	PS	NS
500	4009-7512	do.	do.	1957	290	Drl	6	240	—	Trs	1957	8	342	PS	
501	4001-7507	George Zeitter	J. Carson's Sons	1957	—	Drl	6	100	39	Trs	8-23-57	11	33	D	
502	4011-7508	Wilt Kolin	J. Carson's Sons	1957	—	Drl	6	123	34	Trs	9-17-57	45	12	D	
503	4011-7509	Daniel Tedesco	J. Carson's Sons	1957	—	Drl	6	77	30	Trs	8-22-57	18	30	D	
504	4011-7509	Bailey & Mandalhen	do.	1957	—	Drl	6	82	30	Trs	—	28	30	D	NS
505	4009-7512	Ambler Boro	—	1957	310	Drl	—	—	—	Trs	—	—	—	—	NS
506	4009-7515	Boehm's Church	Ridpath & Potter	1956	360	Drl	6	204	—	Trs	11- 1-57	32	50	D	
507	4009-7516	Mavrice Potter	do.	—	360	Drl	—	200	—	Trs	—	—	—	PS	NS
508	4009-7510	M. M. Ritter	Wm. Musselmen & Son	1957	—	Drl	6	—	30	Trs	9- 5-57	55	14	D	NS
509	4008-7510	Wm. Schrope	J. Carson's Son	1957	—	Drl	6	104	30	Trs	9- 5-57	30	15	D	NS
510	4010-7508	Benjamin P. W. Park	do.	1957	—	Drl	6	108	42	Trs	9-12-57	55	15	D	NS
511	4011-7507	M. C. Hughes	Wm. Musselman & Son	1957	—	Drl	6	85	—	Trs	9-13-57	25	25	D	
513	4010-7507	Robert Timby	J. Carson's & Son	1957	—	Drl	6	92	30	Trs	10-19-57	45	15	D	NS
514	4010-7508	Floyd Troutman	R. A. Kessinger	1957	—	Drl	6	53	30	Trs	9-27-57	38	—	D	NS
515	4010-7508	Anton Kinsch	J. Carson's Sons	1957	—	Drl	6	150	31	Trs	9- 9-57	45	10	D	NS
516	4010-7508	Frank Murphy	Wm. Musselman	1957	—	Drl	6	84	42	Trs	8-30-57	20	20	D	NS
517	4009-7512	Howard Mahoney	Ridpath & Potter	1957	—	Drl	—	90	—	Trs	9- 7-57	34	20	D	
518	4010-7508	Mand Kiley	J. Carson's & Son	1957	—	Drl	6	75	40	Trs	11- 8-57	38	18	D	NS
519	4010-7508	Paul Eisfild	do.	1957	—	Drl	6	63	44	Trs	11- 2-57	15	20	D	
520	4012-7511	E. Behrens, Jr.	do.	1957	—	Drl	6	110	30	Trs	10-15-57	30	15	D	
521	4012-7512	G. T. Norton	Wm. Musselman	1957	—	Drl	6	92	25	Trl	10-29-57	15	15	D	
522	4011-7510	Charles Boteler	do.	1957	—	Drl	6	88	32	Trs	10- 3-57	30	20	D	
523	4009-7510	Bastel Sutter	F. E. Ruehler & Son	1957	—	Drl	6	90	30	Trs	10- 7-57	5	25	D	NS
524	4010-7507	Albert Hilker	J. Carson's Sons	1957	—	Drl	6	107	32	Trs	11- 5-57	55	10	D	
525	4010-7512	Albert Ambrosch	do.	1957	—	Drl	6	96	30	Trs	9-19-57	55	14	D	
526	4010-7511	Blankenkorn	do.	1957	—	Drl	6	85	32	Trs	9-23-57	15	30	D	NS
527	4011-7509	Rauther	do.	1957	—	Drl	6	—	11	Trs	—	—	25	D	
528	4011-7507	L. Hoffman	do.	1957	—	Drl	6	87	30	Trs	10- 8-57	30	25	D	
529	4011-7506	Royal Grote	J. Carson's Sons	—	—	Drl	6	135	30	Trs	11- 7-57	41	8	D	NS
530	4011-7506	Christian Renner	do.	—	—	Drl	6	55	35	Trs	10-14-57	30	20	D	
531	4010-7524	M. Eastman	Keyes	1957	—	Drl	6	167	—	Trl	—	—	35	D	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
532	4008-7510	Selas Corp. of America	Ridpath & Potter	1957	260	Drl	—	—	—	Cch	—	—	60	Air	
533	4008-7516	A. F. Picolet d'Hermillian	do.	1957	295	Drl	—	—	—	Trs	—	—	—	D	NS
534	4013-7525	E. State Penitentiary	F. L. Bollinger	1928	255	Drl	10	489	10	Trb	7-25-63	234	155	PS	NS
535	4013-7525	do.	do.	1929	280	Drl	10	552	21	Trb	7-25-63	248	135	PS	NS
536	4013-7525	do.	do.	1929	280	Drl	10	497	32	Trb	1962	245	116	PS	
537	4013-7526	do.	do.	1929	280	Drl	10	596	20	Trb	7-23-63	260	98	PS	NS
538	4014-7525	do.	do.	1937	305	Drl	12	512	19	Trb	1960	204	355	PS	
539	4014-7525	do.	Artesian Well Drilling	1951	285	Drl	16-8	502	24	Trb	7-23-60	195	300	PS	NS
540	4013-7526	do.	Bollinger	1951	270	Drl	10	600	—	Trb	4- 9-62	180	90	PS	CA
541	4010-7530	Charles Johnson Home	do.	1959	150	Drl	12-8	300	44	Trb	6- 9-60	15	135	PS	CA
542	4010-7530	do.	—	1930	240	Drl	8	198	—	Trb	—	—	84	PS	NS
543	4010-7532	Diamond Glass Co.	Ridpath & Potter	1956	110	Drl	16-10	400	50	Trb	8-10-56	20	191	I	
544	4010-7532	Spring Ford Foundry Co.	—	—	115	Drl	—	120	—	Trb	—	—	—	I	NS
545	4010-7532	Bush Bros.	C. S. Garber	1947	115	Drl	10	223	—	Trb	—	—	60	I	NS
546	4011-7532	Potts Bros.	do.	1959	227	Drl	6	172	42	Trb	1959	37	40	I	NS
547	4011-7532	Royersford Foundry	—	—	120	Drl	6	100	—	Trb	—	—	—	I	NS
548	4011-7532	Bankers Bar	C. S. Garber	1959	160	Drl	6	201	50	Trb	—	—	60	D	
549	4011-7532	Nelson Ice Cream Inc.	Kohl Bros.	1925	175	Drl	8	225	—	Trb	—	—	60	I	NS
550	4011-7532	Cann & Saul Steel Co.	do.	1941	187	Drl	6	235	40	Trb	6- 8-60	11	30	O	
551	4012-7522	O. J. Hynes	—	—	265	Drl	8	450	—	Trb	3-30-60	63	—	I	CA
552	4012-7525	John Nast	A. W. Dorn & Son	1957	260	Drl	6	90	—	Trb	3-30-60	21	—	D	NS
553	4012-7525	Natalie Schmidt	—	1959	260	Drl	6	102	38	Trb	—	—	25	D	NS
554	4012-7525	McCormic Air Service	Miller Pump Service	1959	285	Drl	6	154	40	Trb	3-30-60	50	40	D	
555	4012-7532	S. A. Welty & Sons	C. S. Garber	1949	260	Drl	6	160	12	Trb	6- 9-60	72	—	I	
556	4012-7532	do.	do.	1956	260	Drl	6	190	21	Trb	8-20-56	69	15	I	
557	4012-7534	Kinsey Distilling Corp.	do.	1934	150	Drl	10	394	21	Trb	—	—	95	I	CA

558	4012-7534	do.	do.	1934	150	Drl	10	360	—	Trb	—	—	225	I	NS
559	4012-7534	do.	do.	1934	155	Drl	10	328	—	Trb	—	—	107	I	NS
560	4012-7534	do.	do.	1934	170	Drl	10	145	—	Trb	—	—	10	I	NS
561	4012-7534	do.	do.	1935	115	Drl	6	179	—	Trb	—	—	55	I	NS
562	4012-7534	do.	—	—	145	Drl	10	365	—	Trb	—	—	213	I	NS
563	4012-7534	Sanitary Co. of America	—	—	135	Drl	—	—	—	Trb	—	—	—	PS	NS
564	4012-7534	do.	—	—	125	Drl	—	200	—	Trb	—	—	—	I	
565	4012-7534	do.	Wallace Reigner	1959	127	Drl	6	98	—	Trb	—	—	—	D	NS
566	4013-7518	Martin Century Farms	F. L. Bollinger	1960	280	Drl	14-10	330	45	Trb	3-17-60	15	226	I	
567	4013-7521	C. V. Hollis	—	1943	267	Drl	6	135	50	Trb	—	—	—	D	NS
568	4013-7521	C. W. Bosler	—	1940	255	Drl	6	110	50	Trb	—	—	—	D	NS
569	4013-7521	do.	—	—	255	Drl	6	79	25	Trb	3-31-60	23	—	U	
570	4013-7521	Fischers Pool	P. Flaherty	1948	195	Drl	8	195	25	Trb	—	7	48	PS	
571	4013-7521	do.	do.	—	181	Drl	6	90	25	Trb	—	—	20	PS	NS
572	4013-7522	do.	do.	—	176	Drl	6	78	25	Trb	—	—	20	PS	NS
573	4013-7522	do.	do.	1935	178	Drl	6	90	25	Trb	—	—	20	D	NS
574	4013-7524	John Gregory	—	—	270	Dug	—	19	—	Trb	3-30-60	8	—	D	
575	4013-7524	Anna Lewandouski	Parente Bros.	1940	210	Drl	6	140	—	Trb	—	—	—	D	
576	4013-7336	Firestone Tire & Rubber Co.	C. S. Garber	1947	152	Drl	14-10	351	38	Trb	—	—	180	I	NS
577	4013-7536	do.	do.	1942	153	Drl	14-10	402	35	Trb	—	—	193	I	CA
578	4013-7536	do.	do.	1947	152	Drl	14-10	342	25	Trb	—	—	73	1	NS
579	4013-7536	Firestone Tire & Rubber Co.	C. S. Garber	1942	147	Drl	14-10	494	75	Trb	9-22-61	52	61	I	NS
580	4013-7536	do.	do.	1942	136	Drl	14-10	276	36	Trb	—	—	153	I	CA
581	4013-7536	do.	do.	1942	190	Drl	14-10	394	48	Trb, Trl	6- 1-60	79	62	U	NS
582	4013-7536	do.	do.	1947	130	Drl	14-10	371	37	Trb	—	—	94	I	NS
583	4013-7536	do.	do.	1942	165	Drl	14-10	355	47	Trb	—	—	170	I	CA, NS
584	4014-7536	do.	do.	1942	186	Drl	14-10	406	42	Trb	—	—	108	I	CA, NS
585	4014-7536	do.	do.	1942	157	Drl	14-10	266	50	Trb	—	—	70	I	CA
586	4014-7514	The Mart	—	1953	—	Drl	—	—	—	—	—	—	—	D	
587	4014-7514	do.	—	1953	—	Drl	—	—	—	—	—	—	—	D	NS
588	4014-7515	Picolet Dye Works	Walter Emert	—	430	Drl	6	—	—	Trl, Trb	6-23-66	36	—	U	NS
589	4014-7515	do.	do.	1951	430	Drl	6	820	—	Trl, Trb	—	—	4	1	NS
590	4014-7515	do.	Wm. Stothoff	—	430	Drl	—	300	—	Trl, Trb	—	—	20	1	NS
591	4014-7515	do.	Walter Emert	—	425	Drl	6	400	—	Trl, Trb	—	—	12	I	
592	4014-7516	Lansdale Borough	—	—	390	Drl	12-8	235	44	Trl, Trb	5-26-59	87	67	PS	NS
593	4014-7518	do.	Kohl Bros.	1958	320	Drl	12-8	492	76	Trb	1959	111	200	PS	
594	4014-7520	H. H. Becker	—	1925	185	Drl	6	—	—	Trb	4-18-60	23	—	PS	
595	4014-7525	State of Pennsylvania	T. G. Keyes	1955	265	Drl	10	135	42	Trb	4-27-60	32	17	D	
596	4014-7525	Robert Alderfer	Parente Bros.	1943	275	Drl	6	210	30	Trb	1957	152	30	D	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
597	4014-7533	Pottstown Airport	C. S. Garber	1958	310	Drl	6	220	40	Trb	—	90	12	D	
598	4014-7536	Sunnybrook Enterprises	do.	1954	150	Drl	8	262	46	Trb	4- 3-62	8	90	PS	
599	4014-7537	Dana Corp.	—	—	155	Drl	8	385	40	Trb	—	—	160	I	NS
600	4014-7537	do.	—	—	155	Drl	10	287	—	Trb	—	—	130	I	NS
601	4014-7537	do.	Joseph Smith	1941	160	Drl	8	540	40	Trb	1- 7-42	30	125	I	
602	4014-7537	do.	do.	1941	150	Drl	8	425	40	Trb	—	—	90	I	NS
603	4014-7537	do.	Kohl Bros.	1942	150	Drl	6	916	850	Trb	—	—	150	I	CA
604	4014-7538	Bethlehem Steel Co.	—	1916	145	Drl	8	200	—	Trb	—	25	200	I	
605	4014-7538	do.	—	1916	145	Drl	8	200	—	Trb	—	25	200	I	NS
606	4014-7538	Levengood Dairy	—	1917	165	Drl	—	—	—	Trb	—	—	—	I	NS
607	4014-7538	do.	Joseph Smith	1932	165	Drl	8	184	—	Trb	—	—	150	I	NS
608	4014-7539	S. G. Flagg Inc.	—	1910	150	Drl	—	201	40	Trb	1958	100	120	I	
609	4014-7540	do.	Kohl Bros.	1945	145	Drl	8	200	85	Trb	1958	63	147	I	NS
610	4014-7540	do.	do.	1947	145	Drl	8	244	82	Trb	1958	86	200	I	NS
611	4014-7540	do.	do.	1948	145	Drl	8	350	36	Trb	1958	96	255	U	NS
612	4015-7514	Lock Seam Tube Co.	—	—	455	Drl	—	—	—	Trb	—	—	—	D	
613	4015-7515	Picolet Dye Works	Walter Emert	—	370	Drl	6	320	—	Trb	—	—	15	I	NS
614	4015-7515	do.	do.	—	375	Drl	6	120	—	Trb	—	—	10	I	
616	4013-7522	E. D. Rutter	—	—	180	Drl	6	100	—	Trb	—	—	25	I	CA
618	4015-7516	Penndale Inc.	R. L. Knieriem	1958	360	Drl	—	330	—	Trb	—	—	30	I	NS
619	4015-7517	American Encaustic Tile	—	—	335	Drl	—	88	—	Trb	6- 8-56	74	—	U	NS
620	4015-7516	do.	Wm. Stothoff	1955	360	Drl	10	400	116	Trb	3-28-58	94	100	I	
621	4015-7516	do.	do.	1957	335	Drl	10	400	—	Trb	1957	58	—	I	NS
622	4016-7516	A. M. Kulp School	Miller Pump Service	1956	297	Drl	8-6	600	100	Trb	10- 9-57	24	55	PS	
623	4015-7517	Lansdale Municipal	Wm. Stothoff	1957	330	Drl	10	507	97	Trb	12-18-62	41	200	U	NS
624	4015-7517	J. W. Rex Inc.	F. L. Bollinger	1958	315	Drl	8	504	85	Trb	1958	105	9	U	NS

625	4015-7517	do.	do.	1958	320	Drl	8	384	62	Trb	1960	54	186	I	
627	4015-7519	Paul Clemens	—	—	345	Drl	6	125	—	Trb	4- 1-60	30	—	D	
628	4015-7519	M. L. Dickinson	—	—	320	Drl	6	84	—	Trb	4- 1-60	49	—	D	NS
629	4015-7520	Christopher Dock High School	—	—	300	Drl	6	101	—	Trb	3-31-60	54	—	PS	
630	4015-7520	do.	A. W. Dorn	1959	300	Drl	8	130	—	Trb	8-10-59	52	60	PS	NS
631	4015-7520	Nice Ball Bearing	Ridpath & Potter	1959	285	Drl	10	500	60	Trb	3-24-60	55	200	I	CA
632	4015-7520	U.S. Geological Survey	C. S. Garber	1960	285	Drl	6	500	31	Trb	8-29-63	71	—	T, O	NS
633	4015-7520	do.	do.	1962	270	Drl	6	500	32	Trb	8-29-63	62	125	T, O	
634	4015-7520	Ewell Davies	—	—	310	Drl	8	198	—	Trl	4- 4-60	55	—	D	NS
636	4015-7520	William Delp	—	—	257	Drl	6	87	—	Trb	4- 1-60	49	—	D	NS
637	4015-7520	Abram Ziegler	Miller Pump Service	1930	220	Drl	8	105	—	Trb	4- 1-60	22	—	D	
638	4015-7520	Frank	Patrick Flaherty	1958	235	Drl	8	100	16	Trb	—	—	40	D	NS
639	4015-7520	William Delp	—	—	240	Dug	—	35	—	Trb	—	—	—	D	NS
640	4015-7528	Schwenksville Water Co.	F. L. Bollinger	1940	238	Drl	8	503	41	Trb	1960	135	80	PS	
641	4015-7528	do.	—	—	260	Drl	6	213	—	Trb	—	—	—	U	NS
642	4015-7528	do.	F. L. Bollinger	—	250	Drl	8	312	—	Trb	1960	120	70	PS	CA
643	4016-7517	Girard Knitting Mills	—	—	330	Drl	6	—	—	Trb	—	—	—	D	
644	4016-7517	Hatfield Borough	William Stothoff	1957	330	Drl	10	400-500	—	Trb	—	—	160	PS	
645	4016-7522	Alderfer Bologna Co.	A. W. Dorn	1959	280	Drl	—	206	27	Trb	7-15-59	36	70	I	
646	4016-7523	Harleysville Insurance Co.	—	1949	335	Drl	—	—	—	Trb	—	—	—	I	NS
647	4016-7523	Lower Salford School	—	1912	280	Drl	6	160	—	Trb	—	—	—	PS	NS
648	4016-7523	do.	—	1936	280	Drl	6	200	—	Trb	—	—	5	PS	
649	4017-7517	Hunter Spring Co.	Kohl Bros.	1960	370	Drl	10	400	42	Trb, Trl	1960	8	105	I	CA
650	4017-7518	Walter Forest	A. W. Dorn	1945	345	Drl	—	75	—	Trb	—	—	16	PS	NS
651	4017-7518	do.	do.	1957	345	Drl	—	170	—	Trb	—	—	25	PS	
652	4017-7518	Schlosser Steel Co.	—	1958	370	Drl	—	87	—	Trb	—	—	—	I	NS
653	4018-7518	A. Steiert & Sons, Inc.	—	1937	390	Drl	10	205	30	Trl	—	25	—	I	
654	4017-7519	Souderton Borough	F. L. Bollinger	1956	380	Drl	—	300	—	Trl	—	—	10	U	CA
655	4017-7520	do.	—	—	375	Drl	—	300	—	Trl	—	—	10	U	
656	4017-7524	NYCE Manufacturing Co.	Parente Bros.	1925	300	Drl	6	—	—	Trl, Trb	5-24-60	9	—	I	
657	4017-7524	do.	do.	1925	—	Drl	6	—	—	Trb	—	—	—	PS	NS
658	4018-7518	R. T. French Co.	F. L. Bollinger	1956	390	Drl	8	400	40	Trb	—	—	100	I	NS
659	4018-7518	Souderton Borough	—	1915	525	Drl	6	600-700	—	Trl	—	--	—	U	NS
660	4018-7518	do.	—	1929	455	Drl	10	300	13	Trb	1953	39	45	PS	
661	4018-7518	do.	—	—	—	Drl	—	80	—	Trb	—	—	—	X	NS
662	4018-7519	do.	F. L. Bollinger	1948	—	Drl	—	300	—	Trb	1960	75	200	PS	CA
663	4018-7519	do.	William Stothoff	1958	340	Drl	8	300	40	Trb	1959	16	110	PS	NS
664	4018-7519	do.	—	1957	340	Drl	10	400	30	Trb	—	—	45	PS	NS
665	4018-7519	do.	F. L. Bollinger	1954	360	Drl	12	300	21	Trb	—	—	80	PS	NS

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
666	4018-7519	Souderton Steam Laundry	—	1929	390	Drl	8	88	—	Trb	—	—	30	I	
667	4018-7519	Eastern Mennonite Home	J. W. Shaw	1917	460	Drl	6	192	—	Trb, Trl	5-23-60	111	10	PS	
668	4018-7519	Granite Hosiery Mills	—	—	390	Drl	8-6	208	—	Trb	6-14-57	65	11	I	NS
669	4018-7519	Souderton Borough	—	—	395	Drl	8	112	20	Trb	1952	48	50	U	NS
670	4018-7519	do.	—	1936	410	Drl	12	205	25	Trb	1960	125	80	PS	NS
671	4018-7519	do.	—	1911	410	Drl	8	224	120	Trb	1-16-61	54	80	U	NS
672	4018-7519	do.	—	—	395	Drl	—	600-700	—	Trb	—	—	15	U	NS
673	4018-7519	do.	—	—	415	Drl	6	300-350	—	Trb	—	—	—	X	NS
674	4018-7519	M. N. Bergey Hosiery Mill	—	—	390	Drl	6	92	—	Trb	—	—	—	U	NS
675	4018-7519	Goodman Silk Mill	—	—	500	Drl	6	750	—	Trl, Trh	—	—	—	U	NS
676	4018-7519	H. S. Souder	—	—	390	Drl	6	90	—	Trh	—	—	—	U	NS
677	4018-7519	H. L. Landis Estate	—	—	480	Drl	6	300	60	Trb	—	—	—	I	
678	4024-7531	E. Greenville Borough	F. L. Bollinger	1950	315	Drl	14-10	300	43	Trb	6-20-59	14	240	PS	CA
679	4018-7519	Souderton Borough	William Stothoff	1960	360	Drl	12-8	308	—	Trb	2-15-61	12	250	O	
680	4018-7532	New Hanover Township School	—	1952	365	Drl	—	500	—	Trb	—	—	—	PS	CA
681	4018-7521	Franconia Township School	Parente Bros.	1939	475	Drl	6	280	—	Trb	—	—	—	PS	
682	4018-7531	Mennonite Home for Aged	—	—	325	Drl	6	60	—	Trb	—	—	—	PS	NS
683	4018-7531	Mennonite Home for Aged	Mayer	1956	325	Drl	8	175	—	Trb	—	—	—	PS	
684	4019-7519	Telford Borough	Ridpath & Potter	—	420	Drl	10	240	—	Trb	—	—	190	PS	
686	4019-7519	Souderton Borough	—	—	450	Drl	—	600	—	Trb	—	—	12	U	NS
687	4019-7537	Fashion Hosiery Mill	Kohl Bros.	1948	340	Drl	6	400	50	Trb	1948	8	150	I	
688	4019-7537	do.	do.	1938	340	Drl	8	600	10	Trb	1948	7	60	R	NS
689	4020-7528	Maranatha Park	Campbell	—	320	Drl	—	300	—	Trb	—	—	20	PS	CA
690	4020-7528	do.	do.	1950	325	Drl	—	310	—	Trb	—	100	—	PS	NS
691	4013-7516	R. D. Gillen	V. D. Kohler	1960	355	Drl	6	171	—	Trb	—	—	—	D	
692	4018-7522	Keller's Creamery	Joseph Mayer	1960	300	Drl	—	150	—	Trb	—	—	—	D	

693	4018-7522	do.	A. W. Dorn	1950	300	Drl	—	150	—	Trb	—	—	—	I	NS
694	4017-7522	do.	J. M. Mayer	1961	—	Drl	—	—	—	Trb	—	—	—	I	NS
695	4017-7517	Dorsey Shutz	—	—	340	Drl	6	55	—	Trb	6-13-61	10	—	D	
696	4017-7523	Harvey Koffel	—	1941	240	Drl	6	78	—	Trb	6-15-61	16	—	D	
697	4012-7522	Gordon Wilkie	Miller Pump Service	1956	230	Drl	6	85	43	Trb	6-14-61	18	—	D	
698	4015-7521	Earl Ehrhart	Charles Lauman	—	200	Drl	6	80	—	Trb	6-14-61	23	—	D	
699	4021-7522	R. L. Koehler	A. W. Dorn	1946	480	Drl	6	81	—	Trb	6-12-61	28	—	D	
700	4014-7540	S. G. Flagg Inc.	Kohl Bros.	1961	145	Drl	8	650	88	Trb	11-20-61	22	75	I	
701	4020-7536	Kowecki Chemical Co.	do.	1957	320	Drl	6	405	19	Trb	1957	20	150	I	NS
702	4020-7536	do.	C. S. Garber	1961	310	Drl	6	300	60	Trb	11- 7-61	8	100	I	
703	4020-7536	do.	do.	1961	315	Drl	6	400	30	Trb	11- 7-61	36	40	U	NS
704	4015-7517	Lansdale Municipal Authority	F. L. Bollinger	1962	310	Drl	14-10	400	83	Trb	12- 4-61	25	135	PS	CA
705	4024-7528	Upper Hanover Township	C. S. Garber	1957	480	Drl	6	275	21	Trb	5- 4-57	Flow	100	D	
706	4016-7539	Leroy Fillman	do.	1962	—	Drl	6	320	24	Trb	1-11-62	218	8	D	
707	4016-7539	C. H. Ross	do.	1962	—	Drl	6	300	25	Trb	1- 9-62	109	5	D	NS
708	4022-7534	H. J. Beitler	Hunsicker	1943	495	Drl	6	123	14	Trb	1955	80	24	D	CA
709	4018-7523	S. P. Godshall	Stover	—	330	Drl	6	80	—	Trb	2- 8-62	51	—	D	CA
710	4018-7527	Frank Sear	C. S. Garber	1950	430	Drl	6	100	—	Trb	2- 8-62	18	—	D	CA
711	4023-7527	A. T. Goodby	W. W. Wonsidler	1957	480	Drl	6	81	30	Trb	1957	12	20	D	CA
712	4017-7535	E. F. Barndt	C. S. Garber	1940	260	Drl	6	157	40	Trb	2- 5-62	7	10	D	CA
713	4013-7514	N. T. Cummings	Miller Pump Service	1956	450	Drl	6	312	40	Trl	1956	80	7	D	CA
714	4014-7538	Ferro-Phos Co.	—	—	175	Drl	6	138	—	Trb	—	40	—	I	
715	4015-7524	Stanley Stemmer	—	1951	300	Drl	6	140	30	Trl	1951	25	20	D	CA
716	4010-7523	F. A. Plummer	Charles Lawman	1937	410	Drl	6	200	—	Trl	—	—	40	D	CA
717	4010-7523	do.	—	1927	410	Drl	8	280	—	Trl	—	—	—	D	NS
718	4013-7531	Fred Tyson	Tenny	1950	295	Drl	6	133	—	Trb	4- 9-62	21	10	D	CA
720	4011-7530	Bechtel's Dairy	Kohl Bros.	1955	230	Drl	6	300	38	Trb	1955	53	70	I	
721	4011-7530	do.	do.	1944	200	Drl	8	325	15	Trb	1944	60	40	I	
723	4018-7521	H. W. Longacre	A. W. Dorn	1958	395	Drl	8	328	29	Trb	10-13-58	76	80	I	
724	4018-7521	do.	—	—	395	Drl	6	—	—	Trb	—	—	—	I	NS
725	4015-7527	Schwenksville Water Co.	F. L. Bollinger	1962	145	Drl	8	300	30	Trb	7-30-62	14	250	PS	CA
726	4014-7536	Amer. Telephone and Telegraph	C. S. Garber	1961	185	Drl	6	300	52	Trb	—	56	37	I	
727	4014-7536	do.	do.	1961	185	Drl	6	300	—	Trb	—	—	30	I	NS
728	4020-7536	Kowecki Chemical Co.	do.	1961	320	Drl	6	360	21	Trb	1961	140	90	D	
729	4024-7530	Perkiomen School	—	1907	340	Drl	6	1,000	—	Trb	7-24-62	Flow	20	U	
730	4020-7536	Kowechi Chemical Co.	—	—	315	Drl	6	125	14	Trb	9-25-62	4	—	X	
731	4017-7517	Hunter Spring Co.	Thomas Keyes	1962	360	Drl	7	400	22	Trl, Trb	1962	6	110	I	
732	4017-7517	do.	do.	1962	360	Drl	8	403	—	Trb	1962	0	7	U	NS
733	4020-7525	E. E. Endy	J. Mayer	—	420	Drl	6	42	—	Trd	8- 6-63	18	2	U	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
734	4020-7526	Delmont Scout Res.	—	—	275	Drl	6	125	—	Trd	8- 9-63	14	20	PS	
735	4020-7526	do.	—	—	275	Drl	6	45	—	Trd	8- 9-63	14	—	D	
736	4011-7526	Linwood Yost	—	—	115	Drl	6	111	—	Trb	—	50	4	D	CA
737	4014-7514	John Wright	—	—	445	Drl	6	90	—	Trl	—	11	15	D	CA
738	4013-7531	Limerick School	—	—	305	Drl	6	110	—	Trb	—	30	15	D	CA
739	4009-7524	Eagleville Sanatorium	—	—	425	Drl	6	511	—	Trl	—	—	9	U	CA
740	4019-7529	Upper Perkiomen Valley Park	F. L. Bollinger	1960	320	Drl	6	415	—	Trd	9- 5-63	35	20	PS	
741	4020-7529	do.	do.	1947	230	Drl	6	359	—	Trd	8-23-63	30	50	PS	CA
742	4020-7529	do.	do.	1940	290	Drl	6	250	—	Trd	—	—	13	PS	
743	4012-7527	Techalloy Co.	C. S. Garber	1961	210	Drl	6	235	42	Trb	1961	65	30	I	
744	4019-7530	R. B. Brooks	—	—	305	Drl	6	65	40	Trd	8-22-63	31	5	D	
745	4020-7530	M. H. Gulack	—	—	340	Drl	6	68	—	Trd	8-22-63	25	3	D	
746	4018-7528	J. L. Beck	—	—	250	Drl	6	38	—	Trd	8-16-63	13	3	D	
747	4020-7523	Ralph Levitz	—	—	350	Drl	6	132	—	Trd	8-30-63	3	3	D	
748	4020-7532	Joseph Kulp	—	1963	420	Drl	6	110	—	Trd	8-28-63	17	.3	D	
749	4020-7532	do.	—	1963	420	Drl	6	42	—	Trd	8-28-63	16	—	U	NS
750	4022-7524	Camp Skymount	Ridpath & Potter	1946	—	Drl	10	53	34	Trd	6-17-46	Flow	15	D	
751	4022-7524	do.	—	—	—	Drl	—	—	—	Trd	—	—	—	D	CA
752	4022-7524	do.	—	—	—	Drl	—	—	—	Trd	—	—	—	D	NS
753	4016-7527	John Lesher	Michael Kuszyk	1963	190	Drl	6	313	20	Trd	8-19-63	14	.1	D	
754	4017-7515	Atlantic Refining Co.	Philadelphia Drilling Co.	1952	275	Drl	6	106	35	Trb	3-25-53	5	20	D	
755	4014-7540	S. G. Flagg, Inc.	Kohl Bros.	1963	150	Drl	10	595	47	Trb	6-13-63	30	430	I	
756	4004-7511	Century Vault Co.	Philadelphia Drilling Co.	1948	—	Drl	6	81	15	Xw	1948	13	25	I	NS
757	4004-7511	Metallurgical Lab. Inc.	Ridpath & Potter	1909	410	Drl	6	437	177	Xw	7-31-42	6	40	I	
758	4006-7512	Henry Bass	—	—	—	Drl	6	385	—	Cl	—	—	—	I	CA
759	3959-7515	Sem. of St. Charles Barraneo	Qunn & Herron	1915	—	Drl	8	600	—	Xgn	—	120	13	PS	

760	3959-7515	E. Baptist Seminary	Ridpath & Potter	1924	—	Drl	10	300	69	Xgn	10-21-24	9	92	U	NS
761	3959-7515	Sem. of St. Charles Barraneo	do.	1927	—	Drl	10	378	52	Xgn	—	43	90	PS	
762	4001-7513	W. Laurel Hill Cemetary	Harper	1910	—	Drl	8	365	10	Xw	—	18	20	D	
763	4004-7517	Quaker Chemical Corp.	—	1930	—	Drl	6	165	—	Ocs	9-28-50	16	150	I	CA
766	4010-7510	Dublin Water Co.	—	—	—	Drl	6	244	52	Trs	—	—	253	PS	
767	4010-7511	do.	F. L. Bollinger & Sons	—	—	Drl	8	300	51	Trs	—	20	163	PS	
768	4008-7526	Audubon Water Co.	—	—	—	Drl	8	356	37	Trs	10-18-51	90	52	PS	
769	4008-7526	do.	—	—	—	Drl	6	160	56	Trs	2- 8-60	31	40	PS	NS
770	4008-7526	do.	—	—	—	Drl	6	240	40	Trs	10-17-69	20	175	PS	
771	4009-7516	Blue Bell Water Co.	Ridpath & Potter	1953	—	Drl	8	250	90	Trs	—	20	302	PS	NS
772	4008-7516	do.	do.	1961	—	Drl	8	400	68	Trs	2-27-61	24	148	PS	
773	4005-7514	Phila. Suburban Water Co.	T. G. Keyes	1955	—	Drl	10	260	178	Ocs	—	40	100	U	NS
774	4007-7508	do.	Schultas Drilling Co.	1956	—	Drl	8	465	424	Cl	—	10	1,016	PS	
775	4007-7508	do.	Thomas Keyes	—	—	Drl	—	175	—	Cl	—	—	—	A	NS
776	4006-7511	do.	do.	1957	—	Drl	14	351	92	Ocs	12- 2-57	31	200	PS	
777	4006-7512	do.	do.	1959	—	Drl	12	300	145	Ce	12- 8-59	41	707	PS	CA
778	4007-7510	do.	do.	1959	—	Drl	12	300	78	Ocs	8-25-60	70	900	PS	CA
779	4007-7517	do.	do.	1960	—	Drl	8	600	40	Trs	8-12-60	49	135	PS	NS
780	4005-7514	do.	Layne New York	1963	—	Drl	10	502	405	Ocs	7- 6-63	58	448	PS	CA
781	4004-7524	do.	do.	1963	—	Drl	8	600	77	Ocs	1963	96	—	A	NS
782	4004-7524	do.	do.	1963	—	Drl	8	220	187	Ocs	—	—	—	X	NS
783	4004-7524	do.	do.	1964	—	Drl	12	502	328	Ocs	8-17-64	112	949	PS	
784	4004-7523	do.	do.	1964	—	Drl	12	493	185	Ocs	—	—	—	T	
785	4008-7517	Phila. Suburban Water Co.	T. G. Keyes	1962	—	Drl	10	463	30	Trs	6-28-62	22	350	PS	
786	4007-7511	do.	—	—	—	Drl	6	600	284	Cl	—	66	150	PS	
787	4007-7511	do.	T. G. Keyes	1964	—	Drl	12	436	253	Cl	7- 7-64	78	950	PS	CA
788	4009-7508	do.	do.	1960	—	Drl	8	410	43	Trs	11-17-60	55	150	PS	
789	4004-7523	Phila. Suburban Water Co.	Layne New York	1964	—	Drl	—	500	—	Ocs	—	—	—	T	
790	4005-7517	do.	Keyes	1960	—	Drl	20	500	21	Ocs	—	44	10	U	
791	4013-7525	E. State Penitentiary	R. Bollinger	1964	—	Drl	8	500	43	Trb	7-28-64	50	45	PS	
792	4014-7526	do.	do.	1965	—	Drl	8	500	42	Trb	1- 4-65	74	318	PS	
793	4006-7527	St. Gabriels Hall	Ridpath & Potter	1929	—	Drl	8	445	65	Trs	—	45	87	D	CA
794	4006-7527	do.	do.	1929	—	Drl	8	500	62	Trs	1951	151	85	D	CA
795	4004-7519	W. Conshohoken Gas Co.	Bollinger	1950	—	Drl	10	500-600	180	Ocs	—	—	—	U	NS
796	4004-7519	do.	do.	1950	—	Drl	8	600	—	Ocs	—	12	35	U	NS
797	4004-7519	do.	do.	1950	—	Drl	10	820	80	Ocs	—	—	79	I	
798	4007-7528	Penco Metal Products	Kohl Bros.	1959	—	Drl	8	290	82	Trs	3-26-59	40	125	I	
799	4005-7521	R. E. Lamb Inc.	do.	1960	—	Drl	6	247	42	Ocs	8- 2-60	150	6	I	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
800	4006-7525	Valley Forge Park	do.	1963	—	Drl	8	400	55	Trs	10-30-63	70	110	I	
801	4008-7512	Fort Washington Chem.	Ridpath & Potter	1943	—	Drl	8	408	—	Trs, Cch	1-18-43	6	17	I	
802	4004-7518	Raint Theater	do.	1945	—	Drl	10	608	63	Xw	3- 6-45	85	2	I	NS
803	4004-7518	Flexton Corp.	do.	1950	—	Drl	10	405	225	Ocs	9-28-50	13	25	I	
804	4005-7519	Prosper War	do.	1948	—	Drl	8	93	44	Ocs	—	17	60	I	
805	4005-7519	F. P. Schofield	do.	1947	—	Drl	8	230	11	Ce	1- 8-47	51	14	D	
806	4006-7520	Energetic Worsted	do.	1941	—	Drl	10	170	18	Trs	5- 6-41	4	114	I	CA
807	4006-7520	Kurtz Bros.	—	—	—	Drl	—	73	—	Trs	—	—	—	U	NS
808	4004-7517	Lee Rubber & Tire	Ridpath & Potter	1942	70	Drl	8	330	—	Ocs	1950	20	480	I	NS
809	4004-7517	do.	do.	1946	70	Drl	20	219	160	Ocs	9-28-50	60	180	I	
810	4004-7517	do.	do.	1938	70	Drl	20	280	183	Ocs	1950	65	289	I	NS
811	4004-7517	do.	do.	—	—	Drl	—	198	20	Ocs	—	—	450	I	NS
812	4005-7517	do.	do.	1952	—	Drl	16	102	78	Ocs	2- 1-52	22	650	I	
813	4004-7517	do.	do.	1947	—	Drl	8	130	13	Ocs	—	54	—	T	NS
814	4004-7517	do.	do.	1947	—	Drl	16	200	21	Ocs	4-25-47	54	427	I	NS
815	4004-7517	Lee Rubber & Tire	Parente	1940	—	Drl	—	235	—	Ocs	—	—	25	U	NS
816	4004-7517	do.	Ridpath & Potter	1947	—	Drl	—	210	—	Ocs	—	—	15	X	NS
817	4004-7517	do.	do.	1946	—	Drl	16	200	22	Ocs	6-16-46	19	300	I	NS
818	4009-7510	G. L. Burnett	do.	1939	—	Drl	6	100	13	Trs	—	—	37	D	
819	4007-7515	Peter Romano	do.	1958	—	Drl	6	150	44	Trs	4-29-58	10	37	D	
820	4003-7519	S. M. Toben	T. G. Keyes	1954	—	Drl	6	200	18	Xhg	—	30	20	D	CA
821	4009-7516	Meadowlands Golf Club	do.	1964	—	Drl	—	—	—	Trs	5-27-64	20	17	D	
822	4000-7512	Connelly Containers	do.	1963	—	Drl	5	232	42	Xw	—	45	2	I	
823		Green Lane Hosiery	Ridpath & Potter	1948	—	Drl	8	620	14	Trd	—	16	13	I	NS
824		do.	do.	—	—	Drl	10	356	13	Trd	—	16	4	I	NS
825		Nicholas Fechyk	Philadelphia Drilling Co.	1948	—	Drl	6	89	—	Trd	—	80	—	D	NS
827	4004-7519	Westfield River Paper Co.	—	—	—	Drl	8	658	—	Xw	—	—	Dry	U	
828	4004-7519	Titus & Taylor	—	—	—	Drl	8	200	—	Xw	—	—	Dry	U	NS
829	4006-7520	Daring Paper Mfg.	Ridpath & Potter	1946	—	Drl	10	571	24	Trs	1946	9	200	I	

832	4005-7502	Valley View Apts.	—	—	—	Drl	6	186	—	Gh	—	152	5	D	CA
833	4004-7518	do.	Ridpath & Potter	1935	—	Drl	8	125	17	Ocs	—	—	72	I	
834	4002-7518	G. G. Clarke	do.	1949	—	Drl	10	243	29	Xhg	—	51	50	D	
835	4006-7519	P. F. Laumer Bros.	Bollinger	—	55	Drl	8	50	2	Ce	4- 9-51	3	50	I	
836	4004-7517	Reilly, Whiteman & Walton	Philadelphia Drilling Co.	—	—	Drl	8	105	30	Ocs	1958	6	60	I	
837	4004-7516	W. C. Hamilton & Sons	Ridpath & Potter	1951	—	Drl	10	400	55	Ocs	3-26-51	9	676	I	
838	4004-7517	Philadelphia Steel & Iron	—	1940	50	Drl	6	125	—	Ocs	—	20	—	I	NS
839	4004-7517	John Wood Co.	—	1914	50	Drl	6	200	—	Ocs	—	25	150	I	NS
840	4002-7519	A. J. Baranzano	Keyes	1954	—	Drl	6	61	53	Xgn	—	6	30	D	
841	4002-7518	R. A. Jones	T. G. Keyes	1958	—	Drl	5	70	26	Xgn	—	20	8	D	
842	4005-7521	Marco Products	do.	1965	—	Drl	6	165	108	Ocs	—	—	100	I	
843	4004-7521	Bassett Steel & Tube	T. G. Keyes	1961	—	Drl	6	260	217	Xw	—	—	Dry	U	NS
844	4004-7521	do.	do.	1961	—	Drl	5	120	102	Xw	—	—	3.5	U	
845	4006-7526	Baldwin-Ehret-Hill	—	1903	—	Drl	6	600	—	Cl	—	—	—	I	
846	4005-7521	Highway Materials Inc.	Kohl Bros.	1946	—	Drl	8	400	40	Cl	—	70	120	I	
847	4015-7539	Philadelphia Dairy Products	do.	1950	—	Drl	8	1,002	31	Trb	—	16	130	I	
848	4015-7539	do.	do.	—	—	Drl	—	701	—	Trb	12-17-48	29	45	I	NS
849		Jones Motor Co.	do.	1946	—	Drl	—	250	24	Trb	—	20	260	I	NS
850	4011-7532	Cann & Saul Steel Co.	do.	1941	—	Drl	6	300	33	Trb	—	33	36	I	NS
851	4011-7526	Superior Tube Co.	do.	1956	—	Drl	8	555	17	Trb	—	135	120	I	NS
852	4024-7530	E. Greenville Borough	F. L. Bollinger	1965	400	Drl	8	550	—	Trb	—	—	40	I	
853	4014-7519	Peter Roberts Inc.	do.	1961	—	Drl	8	300	—	Trb	—	—	—	I	
854	4016-7523	Sparks Corp.	Miller	—	—	Drl	—	150	—	Trb	—	—	200	I	
855	4004-7517	Walker Bros.	F. L. Bollinger	—	—	Drl	6	562	562	Ocs	—	—	—	U	NS
856	4004-7517	do.	do.	—	—	Drl	8	55	55	Ocs	—	—	200	I	
857	4004-7517	do.	do.	—	—	Drl	8	350	100	Ocs	—	—	100	I	NS
858	4009-7516	Blue Bell Water Co.	do.	1965	—	Drl	14	500	60	Trs	—	—	350	PS	
859	4010-7510	Dublin Water Co.	do.	1961	—	Drl	12-8	350	53	Trs	1961	45	39	U	NS
860	4009-7510	do.	do.	1965	—	Drl	14-10	300	40	Trs	—	—	327	PS	
861	4007-7527	Montgomery Co. Sewage Auth.	do.	—	—	Drl	—	192	—	Trs	—	—	25	D	
863	4004-7518	Jones Wollen Mill	do.	—	—	Drl	—	300-400	—	Ocs	—	—	—	I, Dr	NS
864	4004-7518	do.	do.	—	—	Drl	—	300-400	—	Ocs	—	—	—	I, Dr	NS
865	4006-7520	Summerville Tube Co.	do.	—	—	Drl	8	820	—	—	—	—	11	I	NS
866	4006-7520	do.	do.	—	—	Drl	8	525	—	—	—	—	21	I	
867	4006-7520	do.	do.	—	—	Drl	8	815	—	—	—	—	490	I	
868	4006-7520	Burdett Oxygen	—	—	—	Drl	—	240	—	Trs	—	—	60	I	NS
869	4024-7529	Upper Perkiomen Rec. Co.	Mayer	—	—	Drl	—	250	—	Trb	—	—	—	PS	
870	4024-7530	E. Mettalurgical Assoc.	—	—	—	Drl	10	300	—	Trb	—	—	130	I	
871	4009-7515	Meadowlands Golf Club	F. L. Bollinger	1954	305	Drl	10	300	38	Trs	—	—	118	Irr.	

Table 6. *Continued.*

Well number	Location number	Owner	Driller	Date completed	Altitude above sea level (feet)	Method of construction	Diameter (inches)	Total depth (feet)	Depth to bottom of casing (feet)	Aquifer name	Static water level: Date of measurement	Static water level: Depth below land surface (feet)	Yield (gpm)	Use	Remarks
872	4009-7515	do.	do.	1954	—	Drl	10	300	40	Trs	—	—	30	D	
873	4007-7524	Valley Forge Industrial Park	Kohl Bros.	1959	—	Drl	12	400	54	Trs	—	39	119	I	
874	4007-7524	do.	do.	1960	—	Drl	12	400	62	Trs	9- 5-60	30	245	I	
875		North Wales Water Authority	Miller Pump	1964	—	Drl	12-8	500	—	Trb, Trl	—	—	750	PS	NS
876		American Electronics Lab.	—	—	—	Drl	—	300	—	Trb	—	—	300	I	NS
877	4005-7521	Phila. Suburban Water Co.	T. G. Keyes	1965	—	Drl	—	—	—	Oes	—	—	—	X	NS
878	4005-7520	do.	Layne New York	1965	—	Drl	18-14	505	204	Ce	—	204	961	PS	CA
879	4004-7520	do.	T. G. Keyes	1965	—	Drl	—	—	—	Ocs	—	—	—	X	NS
880	4005-7517	do.	do.	1965	—	Drl	—	—	—	Oes	—	—	350	PS	
881		do.	Layne New York	1965	—	Drl	—	500	—	Ocs	—	—	760	PS	NS
882	4005-7524	do.	do.	1965	93	Drl	18-12	275	140	Cl	6-28-65	12	1,810	PS	
883	4007-7504	do.	T. G. Keyes	1956	—	Drl	8	338	74	Xgn	—	Flow	43	PS	
884	4013-7518	Merck, Sharpe & Dohme	—	1965	351	Drl	12-10	600	—	Trb	2-22-65	93	—	O	NS
885	4007-7512	McNeil Laboratories	Rulont Cook	—	—	Drl	—	—	—	Cl	—	—	—	D	NS
886	4007-7512	do.	do.	1958	—	Drl	10	205	137	Cl	—	54	500	I	
887		Standard Pressed Steel Co.	—	—	230	Dug	120	39	—	Xw	5- 4-51	34	—	U	NS
888		do.	Artesian Well Drilling	1944	230	Drl	8	300	—	Xw	12-27-49	60	100	I	NS
889		do.	Ridpath & Potter	1945	230	Drl	12-8	326	—	—	—	38	30	I	NS
890		do.	do.	1945	230	Drl	8	582	—	Xw	9-22-45	32	50	I, U	CA, NS
891		do.	J. H. Rulon	1951	—	Drl	16-10	400	—	Xw	—	15	32	I	NS
892		do.	do.	1951	—	Drl	10	480	—	Xw	—	—	30	I	NS
893		Meyers Dairy	—	1928	—	Drl	6	250	—	—	1947	25	120	I	NS
894		St. Mary's Home for Children	—	—	—	Drl	10	92	—	Trs	—	—	90	PS	NS
895		Reniger & Son Florists	—	—	—	Drl	6	119	—	Trs	1947	0.1	250	I	NS
896		Roberts & Mander	—	—	—	Drl	4	565	—	Trs	1947	65	25	I	NS
897		do.	—	—	—	Drl	4.5	285	—	Trs	1947	65	25	I	NS
898		Firestone Aircraft Co.	—	—	—	Drl	8	126	—	—	1947	14	15	I	NS
899	4012-7508	U.S. Naval Air Station	Bollinger	1942	—	Drl	16-10	397	—	—	1942	8	231	PS	CA, NS
900	4012-7508	do.	do.	1942	—	Drl	16-10	351	—	—	10- 5-42	14	231	PS	CA

of the municipalities in Montgomery County using surface water are supplied by private companies. The amount of surface water pumped for selected municipalities is shown below:

Supplier	*Stream*	*Pumpage in millions of gallons during 1968*
East Greenville	Perkiomen Creek	[a] 57.42
Royersford (Home Water Co.)	Schuylkill River	320.27
Norristown	Schuylkill River	2,875.74
Pottstown	Schuylkill River	880.00

[a] Part supplied from ground water.

The Philadelphia Suburban Water Company uses both ground-water and surface-water sources and supplies many cities and towns in Montgomery County. There is no breakdown of the amounts of water from each source used by this company. Surface-water supplies in Montgomery County are adequate for the present needs.

WATER PROBLEMS RESULTING FROM THE ACTIVITIES OF MAN

Three water problems that have resulted from the activities of man in Montgomery County are (1) declining ground-water levels, (2) changes in streamflow caused by urbanization, and (3) contamination of ground-water reservoirs by domestic and industrial wastes.

DECLINING GROUND-WATER LEVELS

When water is withdrawn from a well, either by pumping or by artesian flow, the ground-water reservoir is modified. Two effects of pumping that cause concern are declining ground-water levels in the vicinity of the pumping wells and lower yields from the pumped wells and nearby wells. The cumulative drawdown effect from closely spaced pumping wells affects the yields of all wells in the cone of depression. A cross section showing drawdown (lowering of ground-water levels) in the vicinity of a pumping well and the effect on the water level of a nearby well is shown in Figure 14. The amount of interference depends upon the complex relationship between the rate and duration of pumping, distance between wells, and the hydraulic properties of the aquifer.

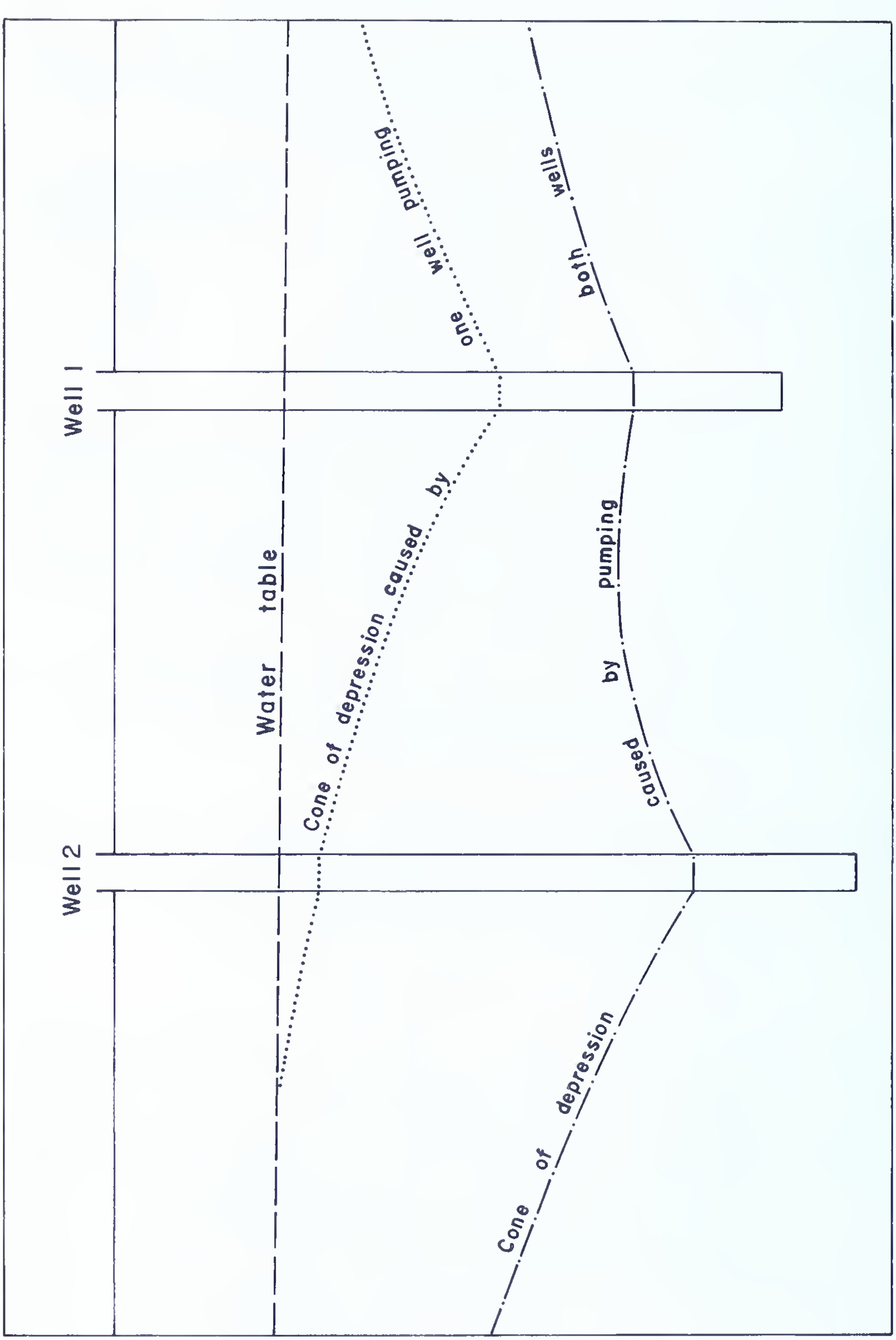


Figure 14. Effects on the water table when wells are pumped.

CHANGES IN STREAMFLOW CAUSED BY URBANIZATION

The effects of urbanization on streams in Montgomery County are not yet readily apparent, but changes will probably become more noticeable as the county continues to urbanize. The flood-flow peaks will get higher as development increases. As more land area is covered by roads, buildings, sidewalks, and parking lots, the runoff will increase. The time between rainfall and runoff will shorten, and the flood crests will be higher. Drainage patterns will be modified to move the water faster. The low flood of streams will decrease because reduced infiltration, faster and more complete runoff, and more evaporation from paved surfaces will reduce the amount of ground water available for low-flow discharge into stream channels.

The quality of the water in the streams will be seriously degraded unless the disposal of domestic and industrial wastes is controlled by intelligent planning and strict enforcement of standards.

CONTAMINATION OF SHALLOW GROUND WATER

Contamination of ground water in Montgomery County occurs in several ways. In areas where there has been much housing construction, and no sanitary sewer systems have been installed, septic-tank discharge pollutes the shallow aquifers. Leakage or spillage of hydrocarbons from oil storage tanks and pipelines can pollute the aquifers. Hydrocarbons are very difficult to remove from the aquifer, and the pollution effects last a long time. The disposal of solid waste by the landfill procedure can cause pollution of the shallow aquifers in Montgomery County. Precipitation on the waste material moves downward, leaching pollutants into the shallow aquifers. Pollution leaching from landfill areas also runs overland into surface-water bodies.

In Table 7 chemical analyses of ground water in Montgomery County are presented to give a background for the ranges of various elements in these waters. In urban and other heavily pumped areas periodic chemical analysis of the ground water would be advisable as a check on possible contamination. Polluted water generally moves slowly through consolidated rocks, but it can move rather rapidly through fractures in this type of rock.

Table 7. *Chemical analyses of ground water in Montgomery County, Pennsylvania*

(Results in milligrams per liter except as indicated)

Well number	Date of collection	Temperature (° F)	Silica (SiO_2)	Total iron (Fe)	Total manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)		Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$: Calcium magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25° C)	pH	Color
Mg 8	1947	—	—	0.0	—	—	—	—		—	—	—	5.0	—	14.0	200	86	—	—	7.0	15
9	1957	54	11	.01	.00	53	24	8.4		2.7	234	33	11	.0	9.0	282	—	39	466	7.9	1
10	1956	55	24	.31	—	49	8.0		6.9		150	28	6.0	.1	7.4	232	155	29	330	8.3	3
11	1956	54	25	.03	—	42	6.5		2.1		111	28	7.0	.1	7.2	213	132	41	296	8.0	2
12	1947	—	—	.23	—	—	—	—		—	—	—	7.6	—	1.9	341	174	122	—	7.7	—
17	1925	55	30	.06	—	72	49	20		3.5	156	279	7.2	—	.69	570	—	—	—	—	—
20	1956	55	26	.01	—	69	27		34		145	116	80	.1	6.7	475	283	164	719	7.7	1
22	1957	54	23	.41	.03	82	28	22		1.4	142	193	34	.1	.10	478	320	203	695	8.1	1
24	1925	55	30	.06	—	72	49	20		3.5	156	279	7.2	—	.69	570	381	—	—	—	—
28	1956	57	29	.16	.00	74	18		28		155	136	30	.1	6.9	454	259	128	627	8.3	1
33	1956	57	30	.17	.00	59	17		17		154	47	28	.1	48	351	217	91	539	7.2	2
35	1947	—	—	1.7	—	77	15	—		—	—	143	72	—	27	—	256	—	—	7.1	15
36	1947	—	—	.1	—	109	10	—		—	—	158	72	—	7	—	314	—	—	7.6	5
37	1933	—	—	.6	—	87	22	—		—	—	87	40	—	—	—	310	—	—	7.7	3
49	1925	52	25	.7	—	40	15	9.8		1.7	187	13	6.8	—	5.2	199	162	—	—	—	—
52	1925	54	18	.06	—	47	17	.41		.05	194	23	13	—	7.5	232	187	—	—	—	—
62[a]	1925	—	32	.05	—	36	15	11	5.1	1.8	173	15	8	—	2.5	201	152	—	—	—	—
76	1952	55	21	.01	—	24	20				150	22	5	—	.4	—	142	19	321	6.4	2
111	1962	56	30	.37	.00	57	18	13		.7	171	69	16	.1	4.9	317	216	76	457	6.6	2
119	1956	—	29	.04	—	233	16		25		118	558	16	.2	.7	1,040	647	550	1,230	7.9	5
145	1956	55	22	.70	—	190	14		13		147	409	7.5	.1	2.3	789	532	411	979	7.6	1
146	1953	54	13	0.02	—	57	28	13		1.0	242	58	18	0.0	9.9	327	257	59	444	7.3	2
148	1962	—	17	.07	.00	45	5.4	12		1.0	134	26	10	.1	13	200	135	25	313	7.5	2
167	1955	—	—	.02	—	—	—	—		—	154	—	22	—	—	270	154	148	—	7.8	—

169	1954	—	—	.06	—	—	—	—		—	138	—	16	—	—	234	138	114	—	7.8	—
186	1954	—	13	.13	—	90	52	—		—	—	4.0	6.5	—	—	—	142	—	—	8.5	—
189	1933	—	—	.1	—	—	—	—		—	—	—	12	—	1.6	167	—	—	—	—	10
190	1962	54	22	.04	.00	55	23	14		1.0	256	19	17	.1	7.7	285	232	22	480	7.6	3
205	1956	—	20	.02	—	28	16		9.9		169	11	1.2	.1	.5	187	136	0	288	6.8	2
209	1956	58	23	.07	.00	31	20		8.1		144	40	8.0	.1	7.4	225	160	42	350	7.5	2
210	1956	54	27	.02	.00	31	14		15		137	20	19.0	.1	9.6	217	135	23	317	7.2	2
211	1952	—	—	1.2	—	—	—	—		—	—	44	17.0	—	3.2	226	—	—	—	6.9	—
212	1956	54	22	.15	.00	39	6.5		27		113	50	17.0	.1	17	274	123	31	367	7.1	1
213	1953	—	—	.1	—	—	—	—		—	—	43	17.0	—	4.0	230	101	—	—	6.6	—
214	1950	—	—	.1	—	—	—	—		—	—	25	6.0	—	1.0	184	134	—	—	7.5	—
216	1956	55	32	.1	—	38	11		17		138	25	14.0	.1	13	264	140	20	243	8.4	1
217	1956	57	24	.2	—	31	10		39		138	70	8.5	.1	6.5	279	118	5	403	7.6	1
218	1956	54	29	.04	.00	41	10		29		140	64	11	.1	11	274	143	29	407	8.2	1
219	1956	55	26	.11	.00	40	5.2		18		137	23	10	.1	13	197	121	9	286	8.0	1
220	1955	—	—	.10	—	—	—	—		—	—	26	12	—	2.0	210	175	—	—	7.7	—
230	1956	57	28	.13	.0	27	15		11		143	12	6.5	.1	9.7	191	129	5	292	8.5	1
270	1957	54	24	.30	.04	23	17	6.8		.7	145	12	4.1	.1	2.8	162	129	9	264	8.1	2
275	1956	57	23	0.01	—	36	10		8.6		126	15	9.0	.1	22	187	131	—	300	7.8	1
276	1956	57	20	.01	—	25	12		12		127	15	6.5	.1	6.3	165	112	4	261	8.3	1
278	1956	58	33	.14	—	41	15	15		—	145	25	22	.1	26	260	160	45	407	8.2	1
281	1952	—	—	.1	—	—	—	—		—	—	33	11	—	41	—	200	50	—	7.4	5
282	1952	—	—	.1	—	—	—	—		—	—	20	6	—	9	—	132	34	—	7.6	5
283	1952	—	—	.1	—	—	—	—		—	—	48	14	—	57	—	220	52	—	7.4	10
285	1956	—	36	.24	—	6.5	3.2	35		—	49	42	7.0	4.0	3.2	197	29	0	232	6.8	2
287	1956	56	19	.13	—	25	9.2	23		—	142	20	6.2	1.6	.2	181	100	0	283	7.6	2
290	1963	—	—	2.0	2.0	—	—	—		—	—	—	9.0	—	.5	260	145	—	—	7.4	5
302	1956	56	12	.5	.00	42	19		12		166	45	10	.1	5.3	260	183	40	425	8.4	1
303	1955	—	20	.0	—	100	46	—		—	—	52	13	—	—	—	146	—	—	6.9	—
304	1956	58	26	.9	.00	34	13		46		104	124	13	.1	5.7	272	187	0	437	8.5	1
359	1956	—	23	.83	.00	42	20		28		255	12	10	.1	5.7	272	187	—	437	8.5	1
363	1956	—	26	.15	.01	16	5.6		12		72	17	5.5	.1	5.2	124	182	—	187	7.5	1
367	1956	54	25	.17	.00	25	14		9.4		144	11	4.0	.1	6.5	173	120	2	265	8.2	2
391	1956	—	8.9	.40	—	4.9	4.8		.7		22	9.4	3.4	.1	.8	45	32	14	69	7.3	1
392	1955	—	20	1.0	—	—	—	—		—	—	—	—	—	—	—	—	—	—	6.0	—
394	1956	—	23	.49	.19	38	20		39		155	65	24	.2	4.0	324	177	50	510	7.3	2
399	1956	—	9.1	.00	—	9.8	5.5		4.8		49	11	3.5	.1	.8	69	47	7	115	7.6	3
406	1956	—	18	.07	—	35	5.9		16		97	29	10	.1	27	212	112	32	397	7.8	1

Table 7. *Continued*

(Results in milligrams per liter except as indicated)

Well number	Date of collection	Temperature (° F)	Silica (SiO_2)	Total iron (Fe)	Total manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)		Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$: Calcium magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25° C)	pH	Color
414	1956	—	17	.20	.00	15	4.8		16		26	27	9.5	.1	37	157	57	36	206	7.2	1
419	1956	54	10	0.30	—	35	10		5.8		122	20	6.8	0.1	13	168	128	28	267	7.2	1
453	1956	55	26	.30	—	43	14		15		184	19	16	.1	6.5	236	160	14	385	7.6	1
454	1956	55	32	.18	—	6.9	2.3		12		36	8.4	5.6	.1	8.9	94	27	0	104	7.2	2
464	1954	—	—	.30	—	620	50	—		—	431	4.3	6	—	.3	980	670	—	—	7.4	—
490	—	—	—	—	—	85	20		25		135	195	—	—	—	490	300	—	—	—	—
493	1961	—	15	.05	.00	51	21	9.9		1.0	208	41	12	.1	5.9	262	214	43	432	7.8	1
494	1961	—	36	1.8	.00	12	40	10		1.0	53	6.7	5.3	.0	11	109	47	3	138	6.5	1
540	1962	56	20	.44	.02	116	51	22		.8	163	370	11	.1	11	732	500	366	959	7.3	3
541	1961	54	22	.05	.00	39	8.3	10		1.0	120	24	7.4	.1	20	192	132	33	295	7.7	2
551	1961	54	19	.26	.01	47	9.0	14		1.0	179	12	9.3	.0	18	214	155	8	351	7.8	2
557	1962	—	24	.00	.17	49	12	12		.8	128	69	5.8	.1	13	252	172	67	378	6.8	3
577	1946	—	—	—	—	112	112	—		—	—	116	2.5	—	—	—	—	—	—	7.5	—
580	1946	—	—	—	—	87	45	—		—	—	76	2.5	—	—	—	—	—	—	7.3	—
583	1946	—	—	—	—	114	94	—		—	—	—	4.0	—	—	—	—	—	—	7.5	—
584	1946	—	—	—	—	30	16	—		—	—	16	3.5	—	—	—	—	—	—	7.5	—
585	1946	—	—	—	—	100	116	—		—	—	68	6.0	—	—	—	—	—	—	7.5	—
603	1961	58	28	3.9	.04	180	32	27		1.0	180	420	18	.2	2.8	805	581	433	1,090	7.4	3
616	1949	54	20	.10	—	52	13	11		1.4	198	23	7.0	.0	12	242	183	21	392	7.5	3
631	1961	54	16	.38	.03	30	8.2	45		.5	173	48	3.5	.0	3.7	239	109	0	378	8.0	2
642	1961	55	28	.02	.03	90	36	19		1.8	162	248	6.0	.2	2.7	534	373	240	747	7.7	2
649	1960	—	12	—	.0	—	—	—		—	—	16.8	8.0	.0	.08	298	232	70	—	—	—
654	1964	—	—	0.2	0.0	—	—	—		—	—	—	10	0.0	2.8	350	255	—	—	7.6	0
662	1961	52	17	.21	.06	71	30	30		1.5	217	84	68	.1	5.6	426	301	123	695	7.9	4
678	1961	54	24	.06	.04	39	14	8.3		1.0	178	17	4.2	.0	8.0	204	155	9	322	7.7	2
680	1961	56	28	.70	.38	59	17	15		1.0	252	37	4.2	.1	.2	283	217	11	447	7.5	6

689	1961	53	32	.02	.05	126	28	19	25	158	300	16	.6	.5	620	430	300	838	7.6	3
704	1961	—	—	.02	—	—	—	—	—	—	—	3.0	—	.1	170	140	—	—	7.9	5
708	1962	54	23	.14	.00	70	21	12	1.5	236	32	20	.1	36	344	261	68	536	7.6	4
709	1962	55	23	.05	.00	44	32	12	1.0	298	9.7	5.1	.1	20	302	250	6	490	8.2	3
710	1962	—	22	.20	.00	55	20	14	2.2	202	40	18	.2	19	307	219	54	478	7.4	8
711	1962	—	33	.07	.00	36	17	11	3.0	152	29	13	.2	8.8	236	160	36	359	7.7	3
712	1962	—	21	1.6	.00	54	36	17	1.5	268	83	6.4	.1	3.1	360	283	63	563	7.6	5
713	1962	55	16	.32	.00	47	32	9.5	1.5	200	48	36	.2	.7	303	249	85	512	7.8	2
715	1962	56	16	.02	.00	47	17	9.8	.8	144	38	16	.1	26	253	188	70	414	7.3	3
716	1962	—	15	.00	.00	52	17	9.2	1.0	193	36	14	.0	2.8	246	200	42	410	7.7	3
718	1962	58	19	3.0	.12	53	15	15	1.5	211	27	13	.0	4.0	255	194	21	429	6.9	5
725	1962	—	—	.00	—	62	102	—	—	—	35	10	—	1.0	160	164	—	—	7.6	0
736	1925	—	23	4.9	—	45	11	12	3.0	183	13	12	—	.88	209	158	—	—	—	—
737	1925	54	13	.27	—	66	23	15	2.7	254	37	22	—	16	320	259	—	—	—	—
738	1925	52	25	.15	—	48	24	12	1.2	234	6.4	19	—	14	252	218	—	—	—	—
739	1925	54	13	.17	—	47	23	22	1.9	283	3.8	7.0	—	.21	283	212	—	—	—	—
741	1949	—	31	1.0	—	22	9.6	6.1	.9	78	25	12	.1	.2	144	94	31	218	7.2	4
757	1965	—	22	0.77	0.55	24	12	20	2.9	60	47	40	0.0	5.1	236	108	61	347	6.1	3
758	1965	—	11	.02	.00	51	36	8.5	2.5	208	47	9.2	.0	83	394	275	105	575	7.6	2
763	1964	—	11	.09	.00	56	25	24	1.8	233	52	28	.0	20	345	243	52	567	7.4	2
777	1959	—	—	.31	.09	—	—	—	—	—	—	5.3	—	2.3	194	139	—	—	8.2	3
778	1960	—	—	.20	.06	51	35	—	—	—	—	12.5	—	3.9	335	270	—	—	7.5	4
780	1963	—	—	.05	.00	—	—	—	—	—	—	8.5	—	.93	264	210	—	—	7.6	2
787	1964	—	—	.17	.05	—	27	—	—	—	—	12	—	1.5	252	221	—	—	7.7	8
793	1929	—	—	.2	—	—	—	—	—	—	—	8.0	—	6.0	—	80	—	—	7.8	5
794	1930	—	—	.3	—	—	—	—	—	—	—	7.0	—	4.0	—	60	—	—	6.8	0
806	1941	—	—	.2	—	—	—	—	—	—	—	35	—	7.0	619	165	108	—	—	—
820	1965	—	16	.09	.00	21	8.3	10	1.2	22	60	11	.1	8.4	154	87	69	233	6.8	2
832	1925	—	23	4.9	—	45	11	12	3.0	183	13	12	—	.88	209	—	—	—	—	—
878	1966	—	—	.14	.1	88	28	—	—	—	—	83	.0	1.6	440	315	—	—	7.5	—
890	1950	—	—	.1	—	—	—	—	—	130	8.2	7.1	—	.0	110	—	74	—	6.4	—
899	1942	—	5.0	3.0	—	16	3.4	—	—	—	—	5	—	1.0	—	—	124	175	8.2	10
900	1942	—	—	0	—	—	—	—	—	—	—	14	—	2.0	—	—	120	170	8.2	0

[a] Combined samples from 3 wells.

DEVELOPMENT OF WELLS

DRILLING METHODS

The first wells completed in Montgomery County were dug by hand. As dug wells can be completed only 2 or 3 feet below the water table, the yield is usually small. Dug wells are being replaced by drilled wells, and two methods are used to drill most of the wells in Montgomery County.

In the cable-tool percussion method, wells are drilled by lifting and dropping a heavy string of drilling tools in the borehole. The drill bit breaks or crushes the rock into small fragments, which are then removed from the hole with a bailer. The rotary drilling method drills wells by crushing the rock with a rotating bit and removing the rock chips by circulating water, drilling mud, or air.

WELL-DEVELOPMENT METHODS

In Montgomery County, well development usually consists of pumping the borehole for a period of time to clean out the drill cuttings. In consolidated rocks, higher well yields might be obtained through development techniques such as mechanical surging, use of explosives, treating the well with chemicals, or by hydrofracking.

Mechanical surging is simply operating a piston in a cylinder with the well bore casing acting as the cylinder and the surge block as the piston. Raising and lowering of the surge block in the well forces the water in and out of openings in the rock. Any loose rock chips or sand grains are drawn into the well bore and can be cleaned out after the surging has stopped. This method is most successful in sandstone and conglomerate. The middle and lower member of the Stockton Formation and some of the sandstone beds in the Brunswick Formation might yield more water to wells if they were developed by surging.

An explosion in a well will fracture the rock and permit freer passage of water into the borehole. Explosives are not always successful in developing higher well yields, but this method may be tried in the denser and more brittle sedimentary rocks. In the more resistant rocks in Montgomery County, such as the Lockatong Formation and some of the Paleozoic rocks, explosives could be used to develop higher well yields.

Developing wells by using chemicals can increase well yields in certain types of rock. In carbonate rocks acid is pumped down the bore-

hole and forced into the openings in the rock. The acid reacts with the rock and enlarges the openings. The acid is then pumped out of the well and the enlarged openings will allow more water to enter the borehole. Detergents can be used in wells where very fine grained material is plugging the fractures in the aquifier. The detergents loosen the small particles so that they can be pumped out of the well, thereby opening up the fractures.

Hydrofracking is a well-development method where a mixture of the water and sand is introduced into the well under high pressure. The water and sand is forced into fractures, then the pressure is released and the sand grains keep the fractures from closing, thereby allowing more water to pass through the fractures.

MANAGEMENT OF WATER SUPPLIES

PROTECTION FROM OVERDRAFT

The Lansdale area, served entirely by local municipal wells, has had the problem of declining water yields. Part of the cause of this situation is the concentration of wells in a relatively small area and a prolonged drought.

The two most obvious solutions are to connect the city lines with those of another water supply and to space new wells farther apart.

A third possibility is the construction of recharge wells, through which water could be forced into the aquifer during periods when an excess is available. Artificial recharge of the aquifer would help insure a greater available supply during times of heavy usage or drought. Finding a source of the recharge water, however, might be a problem more difficult than using more obvious solutions. Water would have to be pumped from reservoir, or a small stream (none of which are nearby) could be impounded to serve as a source for recharge water. The development of recharge areas should be investigated further.

As a fourth alternative, more water supply can be developed from surface-water sources by construction of reservoirs on some of the streams. Potential reservoir sites and their watersheds should be set aside now to assure their availability for such use in the future.

PROTECTION FROM POLLUTION

A primary consideration in protecting a ground-water supply is to keep it free of harmful bacteria. Pollutants may be carried downward from the land surface by infiltrating water. Because ground-water move-

ment is relatively slow, such pollution is slow to accumulate, but it is just as slow to clear up when the polluting source is removed. The part of the aquifer updip from the wells and other nearby recharge areas should be investigated for possible sources of pollution such as sanitary landfills and septic tanks.

Government agencies are becoming increasingly active in the field of pollution prevention; for example, the Pennsylvania Department of Health has set standards for the length and the cementing of casing in wells. But it is everyone's responsibility to protect water supplies from pollution.

WHERE TO GET INFORMATION ABOUT WATER

The Pennsylvania Topographic and Geologic Survey has information on the geology of Montgomery County and has published reports that describe in detail some of the aquifers that underlie Montgomery County and the chemical quality of the ground water. Well-drillers' logs and reports on new wells that have been drilled in the county are also available.

The Private Water Supply section, Division of Sanitation, Pennsylvania Department of Environmental Resources, can supply information on proper well-construction requirements, biological reports on well water, and the chemical quality of ground water in Montgomery County. The Pennsylvania Department of Health, through various regional offices, can test water samples for bacterial pollution. The nearest regional Health Department testing laboratory is in Philadelphia. They also can advise corrective measures when pollution is reported.

The Water Resources section of the Forest and Waters Division Pennsylvania Department of Environmental Resources has information on stream discharges, flood data, reservoir requirements, and power plant discharges.

The Public Utility Commission, Bureau of Rates and Research, has information on some municipal water supplies, including source, average daily use, total annual use, and estimated future needs.

The Water Resources Division of the U.S. Geological Survey has data on wells, springs, and streams, and on the chemical quality of water.

When requesting information on water supplies, give an accurate location of the site about which you wish information. This will help the above-listed agencies to assist you with your problem.

The local well drillers and pump installers can provide prices and suggest the type of equipment needed to develop a water supply. Local well drillers will know the well depth necessary to obtain certain yields and

how much surface casing is required. They can also suggest the proper well diameter for the necessary pumping equipment. Pump installers can supply information concerning the size of the pump, depth of the pump setting, and the pressure-tank capacity.

If chemical analysis of the well water indicates treatment is necessary, any of the commercial water-treatment companies can provide the necessary information and equipment. Equipment for water treatment can be purchased or rented, and it will be serviced by the supplier if desired.

GLOSSARY

Aquifer: A formation, group of formations, or a part of a formation that yields water to wells in usable quantities.

Artesian water: Ground water that occurs under sufficient hydrostatic head to rise above the level at which it was encountered in a well.

Base flow: Discharge entering stream channels as effluent from the ground water reservoir, the fair-weather flow of streams.

Cubic feet per second: The discharge of a stream of rectangular cross section, 1 foot wide and 1 foot deep, whose velocity is 1 foot per second; equivalent to 448.8 gallons per minute.

Cone of depression: A conical depression, on a water table or piezometric surface, produced by pumping a well.

Direct runoff: The water that moves over the land surface directly to streams immediately after rainfall or snowmelt.

Discharge, ground-water: The process by which water is removed from the zone of saturation; also the quantity of water removed.

Drawdown: The lowering of the water table or piezometric surface caused by pumping (or artesian flow).

Evapotranspiration: Process of water withdrawal from a land area by direct evaporation from water surfaces and moist soil and by plant transpiration.

Fanglomerate: A rock composed of heterogeneous materials that were originally deposited in an alluvial fan but which have since been cemented into solid rock.

Fault: A fracture or fracture zone along which there has been displacement of the two sides relative to ane another. The displacement may be a few inches or many miles.

Fracture: Breaks in rocks due to intense folding or faulting.

Ground-water reservoir: An aquifer or a group of related aquifers.

Head (hydrostatic head): The height of a vertical column of water, the weight of which, in a unit cross section, is equal to the hydrostatic pressure at a point.

Homocline: A structural condition in which the beds dip uniformly in one direction.

Hydraulic gradient: The rate of change of hydrostatic head per unit of distance of flow at a given point and in a given direction.

Perched ground water: Ground water separated from an underlying body of ground water by unsaturated deposits.

Permeability: The capacity of a material to transmit a fluid.

Piezometric surface: The surface to which the water from a given aquifer will rise under its full head.

Porosity: The ratio of the aggregate volume of void space in a rock or deposit to its total volume, expressed as a percent.

Recharge, ground-water: The process by which water is added to the zone of saturation, also the quantity of water added.

Runoff: The water draining from an area.

Saturation, zone of: The zone in which interconnected voids are filled with water under pressure equal to or greater than atmospheric.

Specific capacity: The yield of a well, in gallons per minute, divided by the drawdown in the well, in feet.

Stream-gaging station: A gaging station where a record of discharge of a stream is obtained. Within the Geological Survey this term is used only for those gaging stations where a continuous record of discharge is obtained.

Surface water: Water on the surface of the earth.

Transpiration: The quantity of water absorbed and transpired and used directly in the building of plant tissue, in a specified time; also the process by which water vapor escapes from the living plant, principally the leaves, and enters the atmosphere.

Underflow: The movement of water in the ground-water reservoir; also the quantity of water moving in the ground-water reservoir through any vertical plane.

Water table: The upper surface of the zone of saturation, except where the surface is formed by an impermeable body.

Water-table conditions: The condition under which water occurs in an aquifer that is not overlain by an impermeable body and that has a water table.

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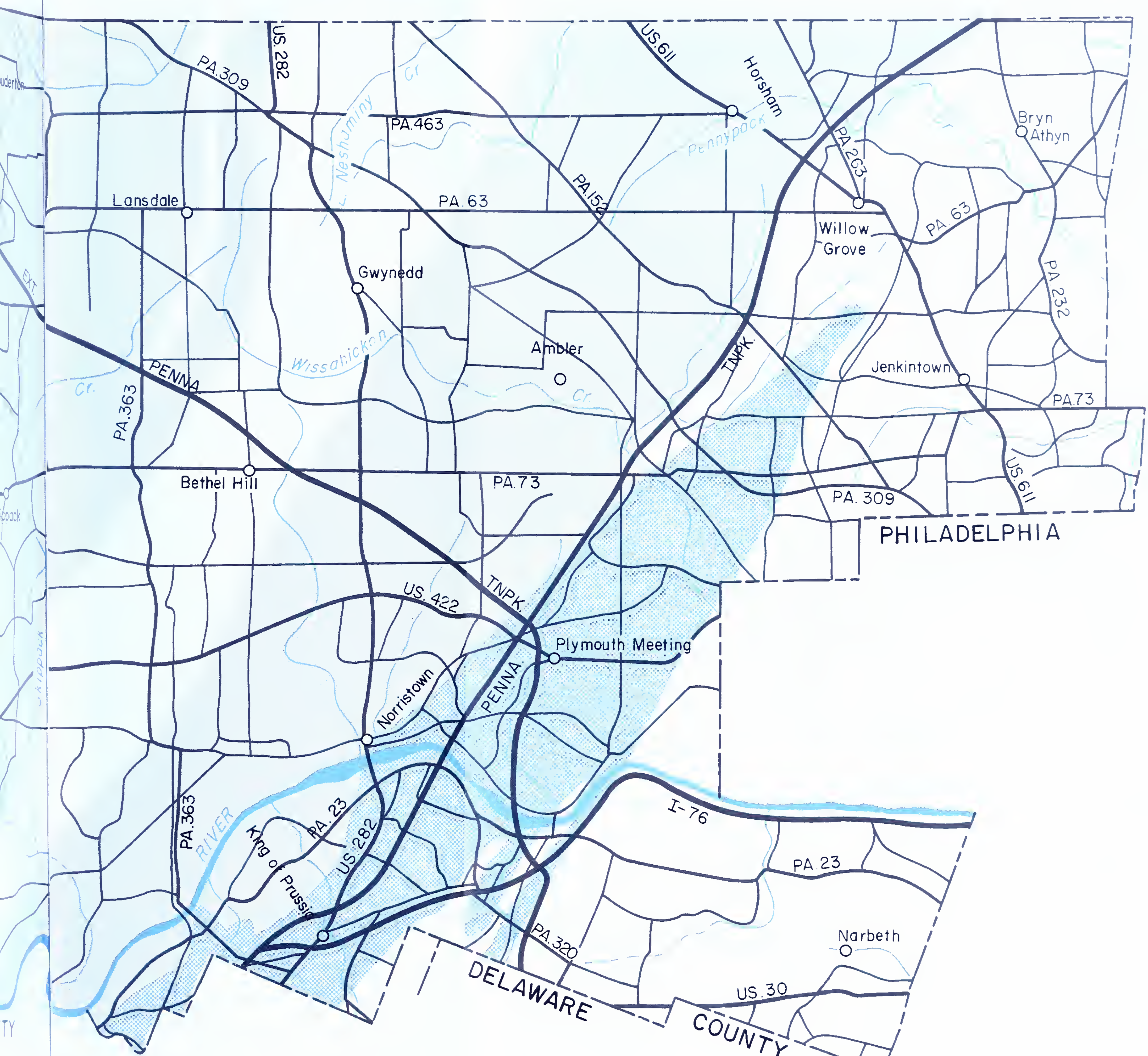
Plate 1. Typical yield o



SCALE

4 MILES

EXPLANATION

Well and number
(Numbers refer to
tables in text.)

yield of wells in Montgomery County

TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist

COMMONWEALTH
DEPARTMENT OF E[V

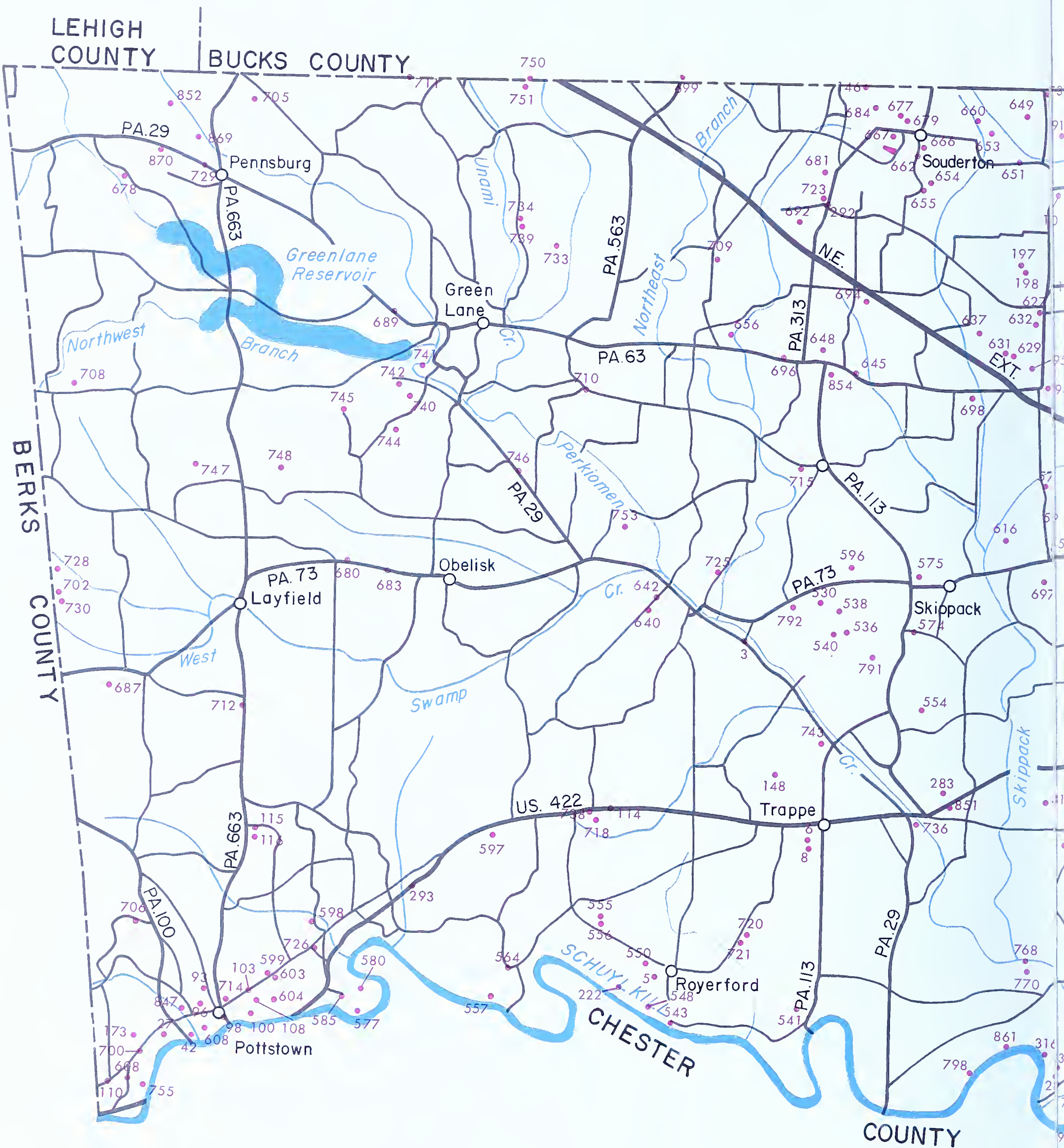


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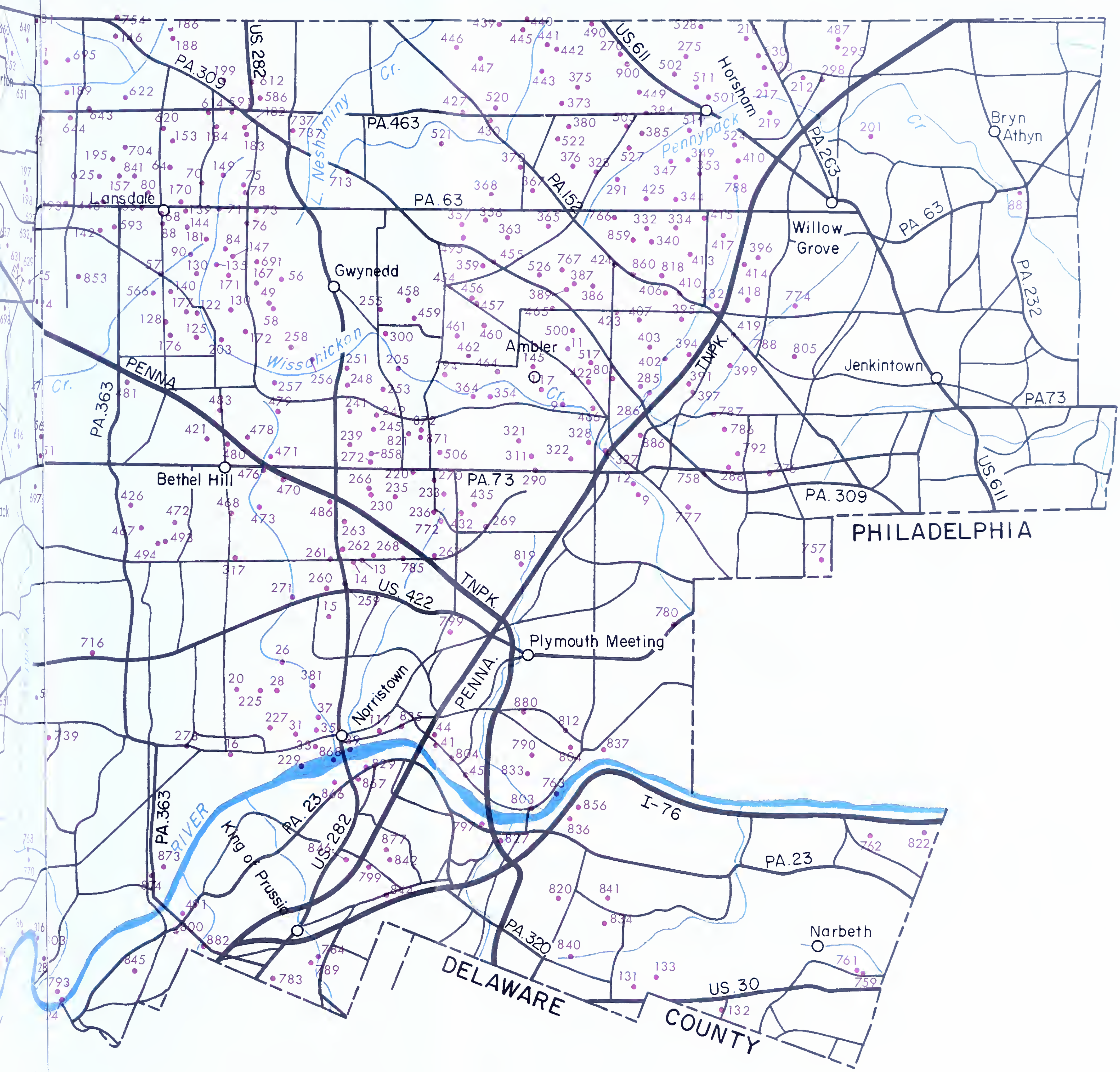
Plate 2. Locations of selecte[d]



SCALE
2
4 MILES

EXPLANATION
Well and number
(Numbers refer to tables in text.)

selected wells in Montgomery County